MARCH 1952

PIT AND QUARRY

In this Issue . . .

National Sand & Gravel Assn., National Ready Mixed Concrete Assn., Missouri Limestone Producers Convention Reports

Baton Rouge Plant of Ideal Cement Co.

Basic Refractories • Cement in Spain

Cactus Sand & Gravel Co. • Flotation

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Operations of Missouri Portland Cement Company near St. Louis, Mo.

Mack six-wheelers get you *out of the rough*

Rough terrain or hub-deep mud holds no terrors for Mack six-wheel trucks. You can count on these unfaltering Macks to take your loads "out of the rough"... to maintain steady, dependable schedules... because they have the unique advantage of Mack's *Balanced Bogie with exclusive Power Divider.*

With the Mack Power Divider, a non-spinning true differential, torque is divided between the two bogie axles and between the four driving wheels. Delivering torque smoothly and continuously without destructive shock in proportion to wheel traction, the Power Divider stops power waste through useless slipping and wheel spinning—keeps Macks moving where other trucks bog down.

If your present truck equipment is having a hard time because of hard going, it will pay you to investigate the benefits you get from Mack six-wheelers in unfailing reliability and uninterrupted production... greater profits through greater output at lower cost. Write or call your nearest Mack branch or distributor.

Mack Internode Power Divider

Mack TRUCKS

outlast them all

Mack Trucks, Empire State Building, New York 1, N. Y. Factory branches and distributors in all principal cities for service and parts. In Canada: Mack Trucks of Canada, Ltd.

In tough dump truck service Mack six-wheelers get you "out of the rough" with unfailing dependability.

TRIPLE SERVICE

Phosphate Flexible Hose Designed by G.T.M.
Handles 3 Times the Tonnage in Mining Mineral

ORDINARY-TYPE hose lasted 6 months—pumped 2,160,000 cubic yards.

Improved type, designed by the G.T.M.—Goodyear Technical Man—served 18 months—handled 6,480,000 cubic yards of clay matrix.

Whatever type of pumping, dredging or jetting work you do, you'll find it pays to consult the G.T.M. for his recommendations on hose—pays you in longer hose life, more dependable service, and is the lowest cost in the long run. Get in touch with the G.T.M. through your nearest Goodyear Distributor, or by writing Goodyear, Akron 16, Ohio.

GOODYEAR INDUSTRIAL RUBBER PRODUCTS
GTM-Specified PHOSPHATE
FLEXIBLE HOSE
A
B
C
A—Long-life, abrasion- and sun-resisting cover.
B—Reinforced with wrapped plies of heavy fabric plus wire helices to resist kinking.
C—Tube resists abrasion of sand, rocks, mud. Gauge depends on materials handled, angle of bend and size of sleeve.

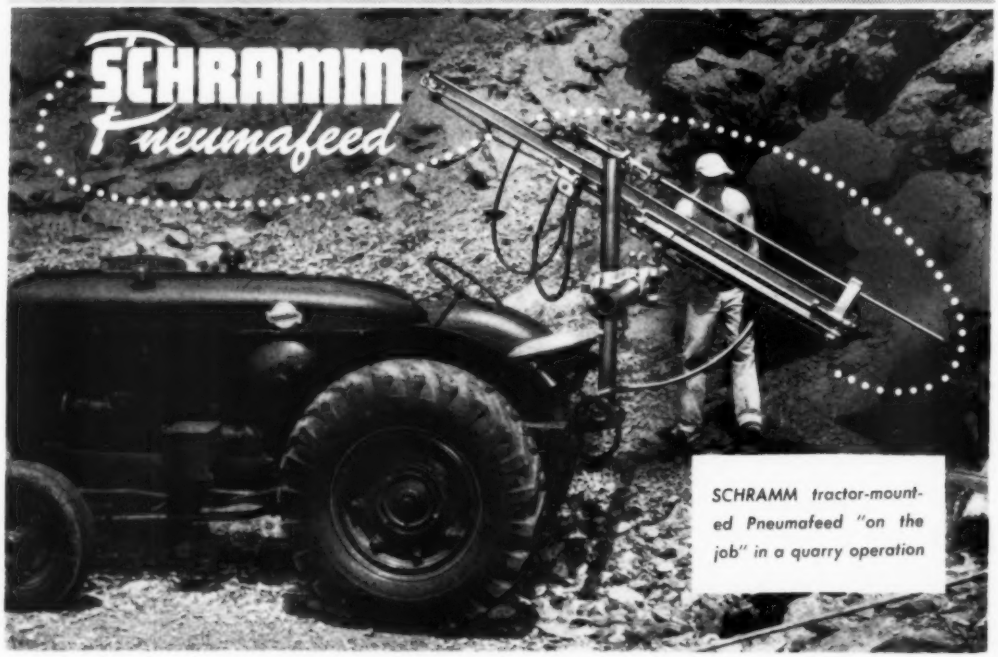
FOR HOSE, FLAT BELTS, V-BELTS, MOLDED GOODS, PACKING, TANK LINING, RUBBER-COVERED ROLLS *built to the world's highest standard of quality, phone your nearest Goodyear Industrial Rubber Products Distributor.*

GOODYEAR

THE GREATEST NAME IN RUBBER

PIT AND QUARRY, March, 1952, Vol. 44, No. 9. Published monthly by the Complete Service Publishing Company, 431 S. Dearborn Street, Chicago 5, Ill. Subscription price $8 for 1 year in the U. S. and possessions, Canada, Central and South America; elsewhere $3 additional for each year. Single copy 25 cents. Entered as second-class matter February 28, 1932, at the Post Office at Chicago, Ill., under the Act of March 3, 1879.

for Faster Drilling!



SCHRAMM tractor-mounted Pneumafeed "on the job" in a quarry operation

SCHRAMM
CONSTRUCTION TOOLS

- Rock Drills
- Wagon Drills
- Trench Diggers
- Clay Spades
- Vibrators
- Drill Rods
- Bits
- Air Guns and Air Hose
- Couplings

Even "hard-to-please" quarrymen are enthusiastic about the SCHRAMM Pneumafeed . . . the modern drill booster.

The Pneumafeed is a self-propelled wagon drill, mounted on a SCHRAMM Pneumatractor, and secured with a mounting post having a saddle and safety clamps.

Pneumafeed employs the hard-hitting SCHRAMM DR-45 Drifter. The unit can be used for drilling at any angle, vertically or horizontally.

Pneumafeed has a travel of seven feet, and can go *fast* in either direction. Drilling pressure is adjustable according to deposit worked. A line oiler is standard equipment.

Pneumafeed is only one of the many highly efficient machines specially developed to improve quarry operations.

Write for Bulletin STB-51

SCHRAMM inc. THE COMPRESSOR PEOPLE
WEST CHESTER, PENNSYLVANIA

FOR MAXIMUM ROAD AND LOAD EFFICIENCY!

Above: EASTON TYPE TL lift door side-dump gooseneck trailer, capacities to 32 tons.

RUGGED, rock-ribbed EASTON truck bodies and trailers are used in combination with any modern off-highway truck chassis or tractor. The combination of separate motive unit and container unit engineering, by separate specialists, provides a safe double check on your haulage investment. Any EASTON-approved combination will give you the maximum possible road and load efficiency, even under the most adverse haulage conditions! EASTON builds several different types of truck bodies and trailers for different types of off-highway service in earth, rock and ore. For information, outline your haulage requirements to: **Easton Car & Construction Company, Easton, Pa.**

EASTON SIDE-DUMPS

B-1051

Barber-Greene

MODEL 543 BUCKET LOADER...

SAVES man power-truck time-money

LOADS all free-flowing materials at 3 yrds. per minute

Cost studies prove that nothing can compete with a Bucket Loader in lowest cost loading from stock piles to trucks.

The B-G constant flow principle virtually eliminates the human element — guarantees the same hourly production all day long, whether the operator is fresh or tired out.

The new Barber-Greene Model 543 is the last word in loading economy. Backed by over a billion cubic yards handled by its predecessors, this machine is ready to cut your loading costs.

The new hydraulically controlled trimmer-conveyor combines with time-proved B-G advantages — such as the Spiral Feed, Cleanup Scraper, automatic Overload Release and Floating Boom — to save appreciable manpower on every job. With its 15 m.p.h. road speed, the 543 can get to the job fast and move from pile to pile in a hurry. It is built for high production through years of low-cost service. In addition, it is convertible to a Snow Loader for year-round usefulness.

BARBER-GREENE COMPANY

AURORA, ILLINOIS, U. S. A.

MORE ROCK SHOVELS for Bryan Rock & Sand Co.

16

A lot of people have said to us. "Don't you get tired of running these ads with numbers in them, telling about repeat orders, year after year?"

Remember, there are a lot of manufacturers who can't do this *month after month, and year after year!* Remember, too, that there is no better endorsement of the performance of a piece of equipment than a repeat order.

When an outfit with tough rock problems like Bryan Rock & Sand Co. buys its sixteenth machine of one make it means something.

No, we never get tired of them! A repeat orders tells you that what we claim is *so.* It proves that Northwest equipment is profitable equipment to own, that Northwests are easy to care for and the fact that this has gone on for years and years proves that Northwest *maintains quality and keeps abreast of the conditions.*

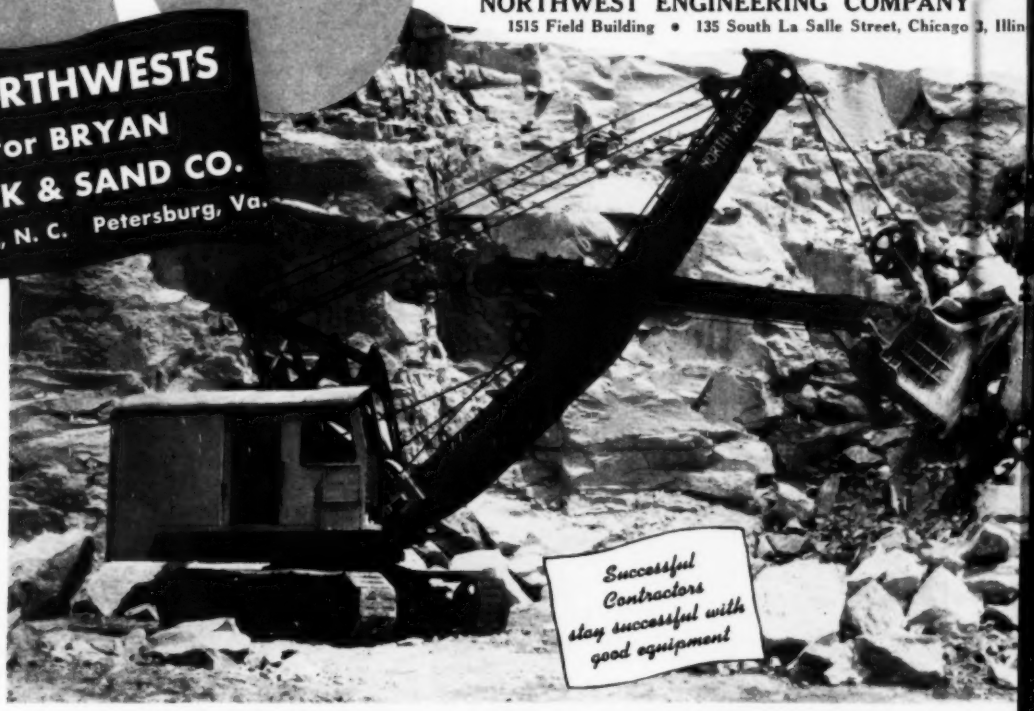
Check up on Northwest. You can plan to have Northwests on your job. Follow the Northwest Crowd! Ask a Northwest Man for details.

NORTHWEST ENGINEERING COMPANY

1515 Field Building • 135 South La Salle Street, Chicago 3, Illin

NORTHWESTS for BRYAN ROCK & SAND CO.

Raleigh, N. C. Petersburg, Va.



NORTHWEST

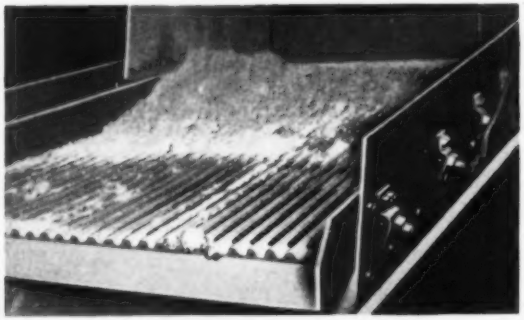
SHOVELS • CRANES • DRAGLINES • PULLSHOVELS • TRUCK CRANES

Convertible for any Mining Material Handling or Excavation Problem

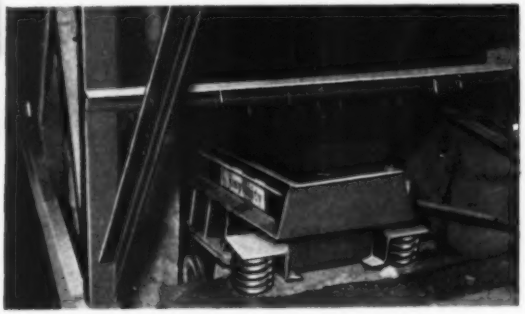
SIX SIMPLICITY UNITS SCREEN, SCALP, AND FEED ALL RAW MATERIAL AND FINISHED PRODUCT AT LIGHTWEIGHT AGGREGATE CORP. PLANT, LIVONIA, MICHIGAN

This new lightweight aggregate plant, installed by Besser Mfg. Co. of Alpena, produces from raw clay a specialized aggregate used to manufacture extremely lightweight block. Six Simplicity units help speed production and improve the quality of these block which have a high structural strength that gives maximum insulation against heat, cold, and sound.

Simplicity equipment will help speed production and keep costs down in your operation, too. Write us today for complete information or consult a Simplicity sales engineer . . . there's one near you.



At the Lightweight Aggregate Corp. Plant, this 3' x 6' Simplicity Screen with 5/8" tubular deck takes clay from the crusher and discharges to a surge hopper on an intermittent cycle at the rate of 100 yards an hour.



The 12" x 8' Simplicity Pan Feeder shown here delivers coke breeze to the conveyor feeding the cintering machine at the rate of 10 yards per hour.

View of the 4' x 8' Simplicity Scalper (left) that removes 3/8" material from cinter cake discharged from the cintering machine. After cooling, the aggregate is screened to minus 5/16" sizes for the silo at the rate of 140 yards an hour on the 5' x 10' Simplicity Ball Tray Deck Screen (right). Oversize aggregate is returned to the crusher and then to a 5' x 10' Simplicity Grading Screen at the silo.

This 2' x 6' Simplicity Horizontal Screen on the coal line has a scalping deck on top. It sizes minus 1/8" coke breeze with a 13% moisture content for the Pan Feeder.

107

Sales representatives in all parts of the U. S. A.

FOR CANADA: Canadian Bridge Engineering Company, Ltd., Walkerville, Ontario

FOR EXPORT: Brown and Sites, 50 Church Street, New York 7, N. Y.

Simplicity
TRADE MARK REGISTERED

ENGINEERING COMPANY • DURAND, MICHIGAN

plan for the best...

If you are seeking more efficient anti-friction performance, you can profit by Torrington's experience and unbiased counsel.

For example, Torrington makes Spherical Roller, Tapered Roller, Straight Roller Bearings and Needle Bearings as well as Ball Bearings and other types. Therefore, our engineers are able to recommend *the* type or combination of types best suited to your design and operating requirements.

Next time you are planning a new design, call in a Torrington engineer. He will be happy to work with you.

THE TORRINGTON COMPANY
South Bend 21, Ind. Torrington, Conn.
District Offices and Distributors in Principal Cities of United States and Canada

TORRINGTON BEARINGS

Spherical Roller • Tapered Roller • Straight Roller • Needle • Ball • Needle Rollers

BUCYRUS ERIE 6 YARD

150-B Brings POWE

NEW SPEED, R, CAPACITY

to loading and stripping

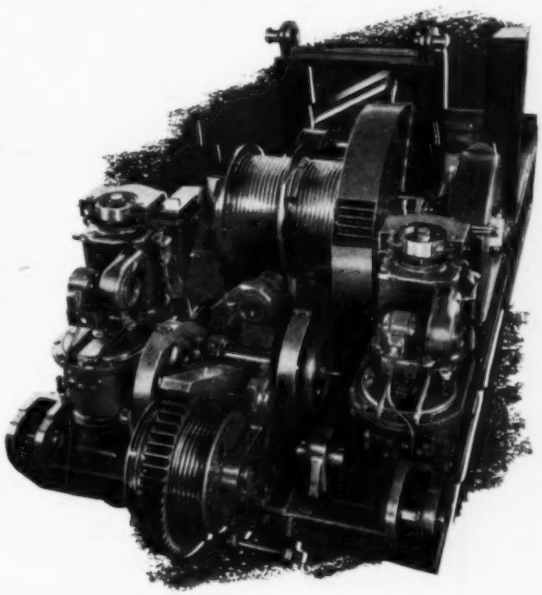
ADDED to the time-proved superiorities of design and construction which have made Bucyrus-Erie quarry and mining shovels traditionally "years ahead" are important features new to an excavator of this size, yet *thoroughly proved in the field.* Among these 150-B features are:

Exclusive Two-Section Boom with tubular dipper handle free to rotate in saddle block. Used with outstanding success on Bucyrus-Erie's large stripping shovels, this design speeds the working cycle and permits increased *payload* because it reduces front end weight materially yet provides enormous strength. Upper section carries only load resulting from pull of ropes, strong trussed lower section transmits directly to the revolving frame the vibrations, torsional and shock loads set up in digging. Rope crowd is quiet, positive, with crowd machinery located on the deck.

Powerful New Main Machinery designed for double twin hoist smoothly delivers power where you want it, when you want it. Hoist machinery pulls dipper straight through tough banks with steady positive action. Fast, smooth swing, with quick acceleration and deceleration, shaves seconds off every cycle.

Larger Stronger Mounting has new propelling machinery arrangement, which provides rapid engagement of the propel for fast move ups. Cored box-section tread links have separate flame hardened wearing paths for rollers and driving tumblers. Cat belts have high wear resistance, stay in adjustment for long periods.

The 150-B has full Ward Leonard independent motor control, is fully convertible to dragline service, features numerous other design advances that make it truly "years ahead". 1152C



BUCYRUS-ERIE COMPANY

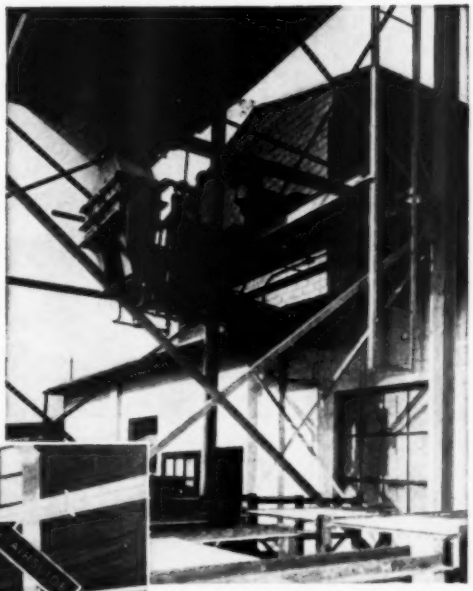
South Milwaukee, Wisconsin

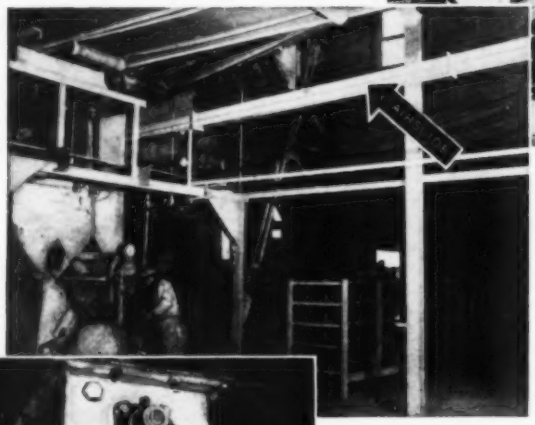
Conveying as it should be

F-H AIRSLIDE®

NO { NOISE / LUBRICATION / DUST HAZARD / MOVING PARTS / EXPENSIVE DRIVES

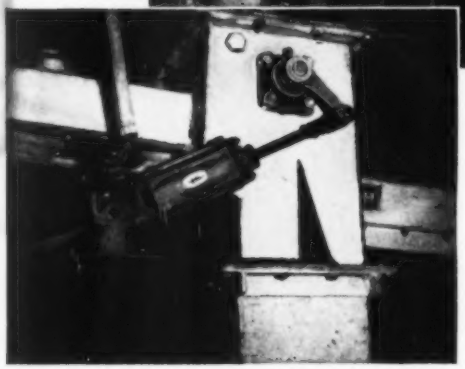
Easy to install • saves valuable space
Low power consumption





Two F-H Airslides underneath a storage bin, each served by an F-H Airfeeder, and each with an independent positive-pressure blower (on crossbeam above Airslides) for individual operation. Airslides withdraw materials from bin and convey to weigh scales above mixers in the plant.

One of the Airslides shown in photo above, conveying to a weigh scale, above a mixer, in the plant.



Close-up of an air motor-operated cut-off gate at the end of an Airslide above a weigh scale. Cut-off gate is activated by an electric contactor on the weigh-scale beam.

Here's the conveyor you have been looking for . . . the modern, efficient method of conveying fine, dry materials . . . using low-pressure air to transport to every part of the plant.

F-H Airslides are hard at work in plants of every size and type, keeping production flowing smoothly at minimum expense. The system can be designed for a degree of flexibility impossible to obtain with straight-line conveyors. Chemical and food-processing plants have found the Airslide Conveyor the solution to the problem of conveying many finely divided materials, with maximum efficiency and economy.

A Fuller engineer will be glad to show you how the Airslide can be put to work for you—prove you can increase efficiency while reducing operating costs. We invite your inquiries and investigation.

"Fuller Company is the exclusive manufacturer of air gravity conveyors, except for use in motor vehicles, under Huron Portland Cement Company U.S. Patent Nos. 2,316,814, 2,517,837, 2,527,394, 2,527,455, 2,527,466, 2,527,488 and Patents Pending".

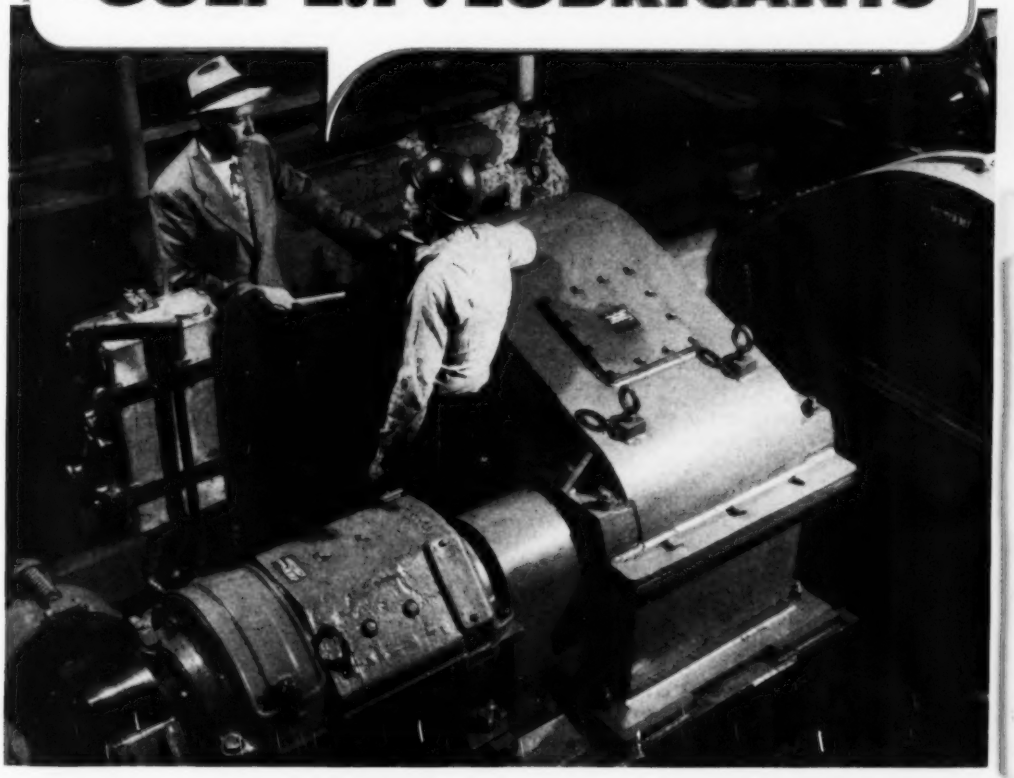
Fuller

DRY MATERIAL CONVEYING SYSTEMS AND COOLERS •
COMPRESSORS AND VACUUM PUMPS •
FEEDERS AND ASSOCIATED EQUIPMENT

FULLER COMPANY, Catasauqua, Pa.
Chicago 3—120 So. LaSalle St.
San Francisco 4—420 Chancery Bldg.

FH-24

For better protection of gears and drives -GULF E.P. LUBRICANTS



All the desirable properties of extreme pressure lubricants are combined in Gulf E. P. Lubricants to insure longer gear and bearing life, and lower maintenance costs for most types of gear drives.

Gulf E. P. Lubricants are specially compounded to withstand the shock loads and high pressures encountered in the toughest service, but are equally effective for all types of industrial gears, including spur, helical, bevel, spiral, worm, and hypoid gears. They prevent metal-to-metal contact and excessive wear, keep maintenance costs low.

They are outstanding in their ability to separate from water. When the proper grade is used and good maintenance practice is employed, most lubrication difficulties caused by water can be avoided.

Other advantages: nonfoaming—saves loss of lubricant and mopping up; tenacious—minimizes throwoff; extremely stable for this type of lubricant; help prevent rust; and they are just as suitable for the lubrication of all types of bearings.

Gulf E. P. Lubricants are available in the proper viscosity for every gear requirement, ranging from 55 to 1050 S.U.V. at 210°F. For specific recommendations for your equipment, call in a Gulf Lubrication Engineer today. Write, wire, or phone your nearest Gulf office, or send the coupon below.

GULF INDUSTRIAL LUBRICATION

Gulf Oil Corporation · Gulf Refining Company PQ
719 Gulf Building, Pittsburgh 30, Pa.

Please send me, without obligation, a copy of your pamphlet "Gulf E. P. Lubricants."

Name.....

Company.....

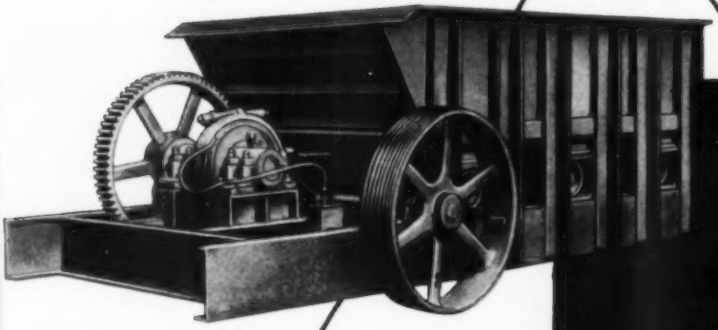
Title.....

Address.....

A Great Combination..

For Low Cost Handling and Crushing Operations!

A combination of McLanahan Reciprocating Plate Feeder and Rockmaster Crusher is your answer to most economical feeding and crushing of 1000 tons or more of limestone, ore or rock per hour. Equipment can be furnished as component parts or as separate units to best suit your application.



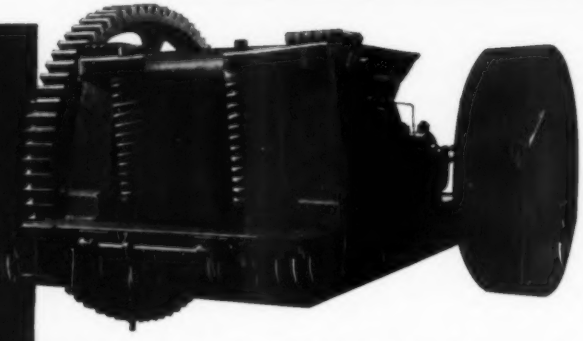
1

Heavy Duty

Built to handle materials from the size of sand to shovel-loaded rock, McLanahan Adjustable Reciprocating Plate Feeders automatically control the rate of flow of material, and are quickly adapted to the producing capacity of any machine.

2

Single Roll



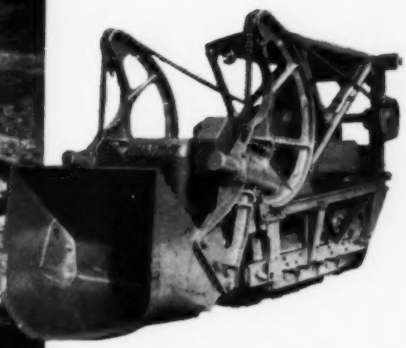
The McLanahan Rockmaster Crusher is the economical solution to most any crushing problems. Greatest savings can be achieved by this combination of equipment. Outstanding for primary and secondary crushing operations, for use on limestone, gypsum, rock, gravel, shale, iron ore, slag and other materials.

Write Today

For Bulletins
RM-505 and FRE-4812

McLANAHAN & STONE CORPORATION
Pit, Mine and Quarry Equipment Headquarters
Hollidaysburg, Pennsylvania

Dependable Products: **Single and Double Roll—and Jaw Crushers, Crushing Plants, Reciprocating Plate and Apron Feeders, Roll Grizzlies, Conveyors, Elevators, Screens, Scrubbers, Steel Log Washers, Sand Drags, Hoists, Jigs, Dry Pans, Dryers, Scrap Bundlers, Pulleys, Gears, Bearings, Sprockets, Sheaves, Rollers, Bin Gates, Elevator Buckets, Gratings, Car Wheels, Ferrous and Bronze Castings.**



LOAD QUARRY ROCK FASTER – CHEAPER

Eimco 104s are loading rock in quarries faster and cheaper.

Faster – because the 1¼ yard rock bucket can be loaded and placed in the truck every 12 to 20 seconds depending on truck location. Eimcos are flexible, easily moved from one location to another.

Cheaper – because this one man loader represents a much smaller initial investment. Eimcos are heavy-duty dependable machines, cost much less to operate.

For loading jobs in mines, tunnels, pits, quarries and construction jobs on highways, railroad, etc., your best buy is an Eimco.

You cant beat an Eimco

EIMCO

THE EIMCO CORPORATION

The World's Leading Manufacturer Of Vacuum Filtration Equipment

EXECUTIVE OFFICES AND FACTORIES: SALT LAKE CITY 10, UTAH, U. S. A.

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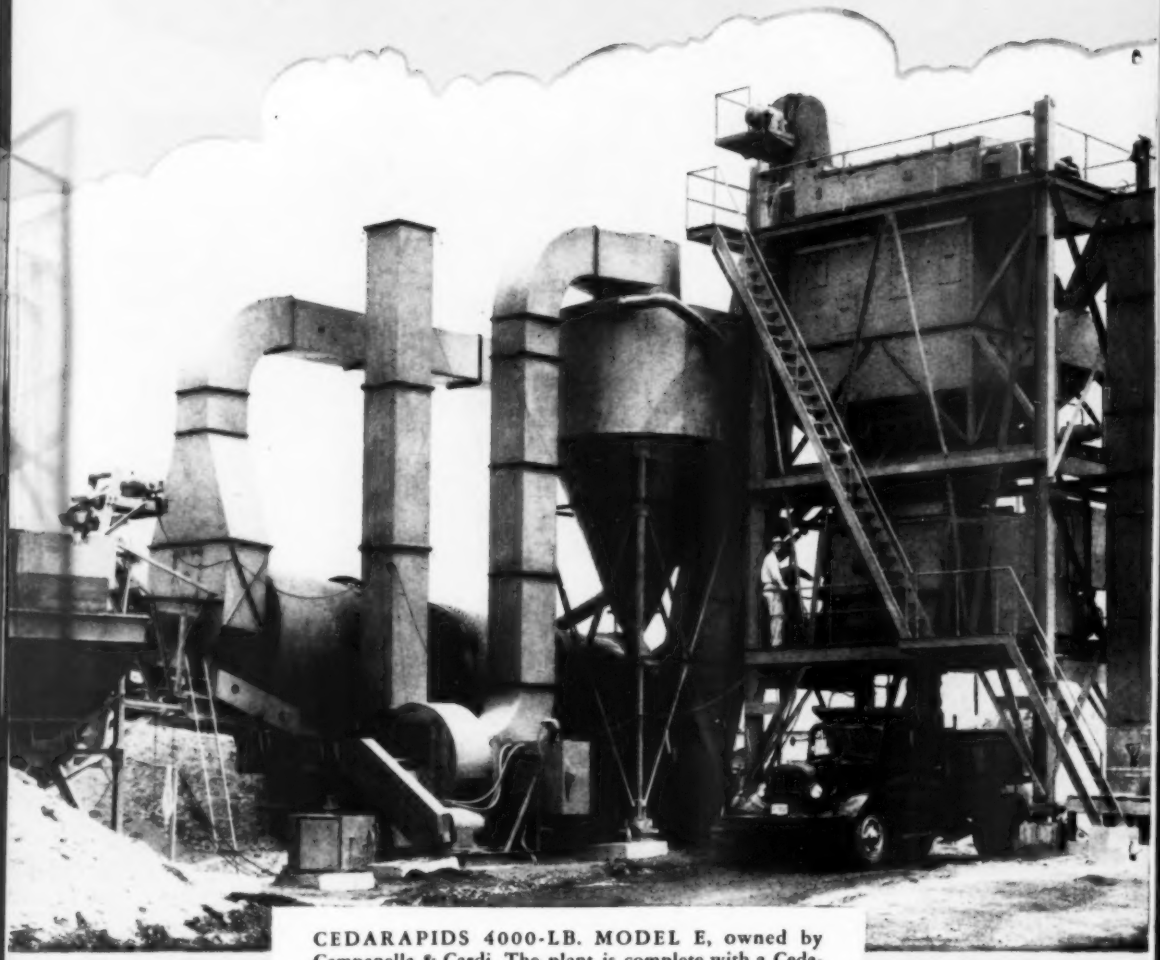
IN ENGLAND: EIMCO (GREAT BRITAIN) LTD., LEEDS 12, ENGLAND
AGENTS IN ALL PRINCIPAL CITIES THROUGHOUT THE WORLD

4364

"WE CAN **BID LOW** ON



CEDARAPIDS 4000-LB. MODEL E, owned by Campanella & Cardi. The plant is complete with a Cedarapids drier, charging hopper and feeder, and a 10′ cyclone type dust collector with dust scavenger and dust elevator.

THE IOWA LINE *of Material Handling Equipment Includes:* ROCK AND GRAVEL CRUSHERS • BELT CONVEYORS • STEEL BINS • VIBRATOR AND REVOLVING SCREENS • UNITIZED ROCK AND GRAVEL PLANTS • FEEDERS • PORTABLE POWER CONVEYORS • PORTABLE AND STATIONARY STONE, GRAVEL AND SAND PLANTS • REDUCTION CRUSHERS • BATCH TYPE AND VOLUMETRIC TYPE ASPHALT PLANTS • DRIERS • DUST COLLECTORS HAMMERMILLS • WASHING PLANTS • VIBRATING SOIL COMPACTION UNITS • DOUBLE IMPELLER IMPACT BREAKERS

that's why we buy

AIRPORT SURFACING PROJECTS... CEDARAPIDS"

says **Campanella & Cardi**
Construction Company
Hills Grove, Rhode Island

HERE'S another contractor who is 100% sold on Cedarapids equipment and the Cedarapids advantages that permit low bids on black top surfacing jobs. Campanella & Cardi are supplying bituminous concrete for the Limestone Air Force Base at Limestone, Maine, using two Cedarapids Asphalt Plants...a 4000-lb. Model E and a Model FA. Their two-year contract calls for production of 150,000 tons for the Base, and with their Model E averaging 125 tons per hour under the direction of Joe Papitto, Superintendent, *the job is now half done and ahead of schedule,* with 75,000 tons already produced!

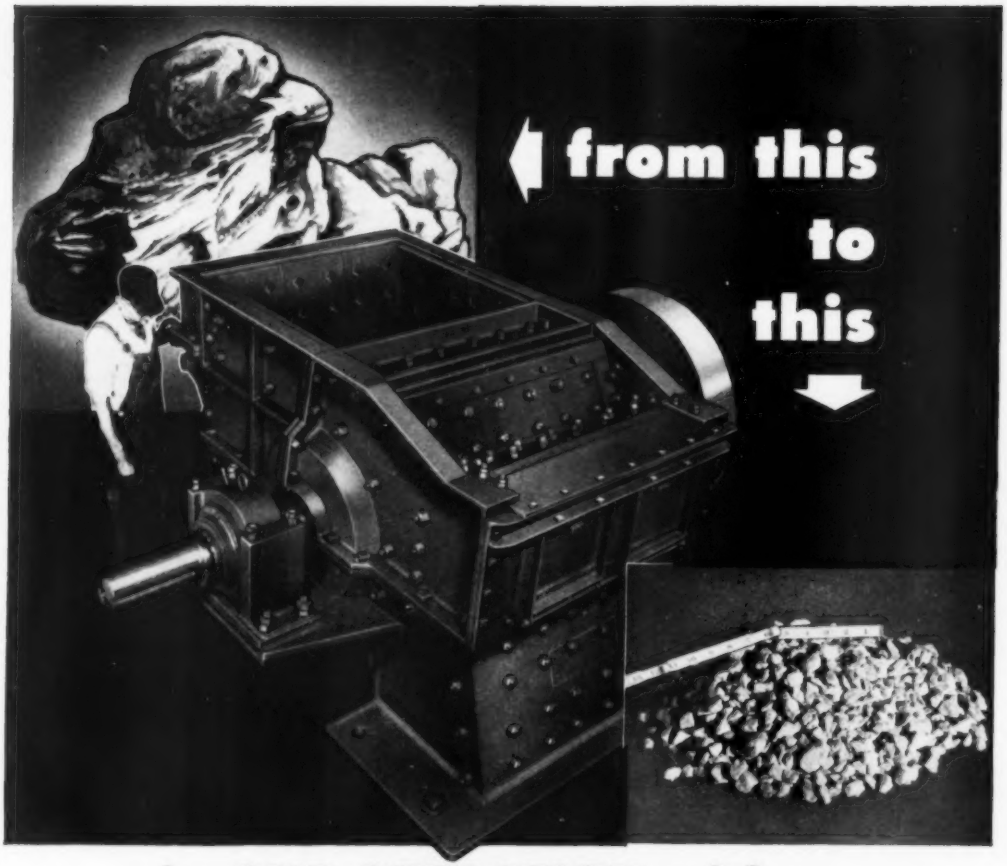
No wonder so many low-bidding contractors buy Cedarapids!

Check these
money-saving features of CEDARAPIDS Bituminous Mixing Plants

- ✓ High capacity 88" x 28' drier allows operation at full capacity regardless of whether or not aggregate contains a high percentage of moisture.
- ✓ Use of multiple burner type pressure air atomizers results in extremely low fuel oil consumption.
- ✓ Because all mixing takes place below the center line of the pugmill shafts, a completely coated mix can be obtained in 10 to 15 seconds.
- ✓ Built-in portability, rugged construction and fast operating controls result in less downtime. Combined with a faster mixing cycle, these features mean lower costs per ton.
- ✓ Central operator's panel, air controls, signal lights, interlocking time controls, complete portability, self-erecting tower and rapid set-up are a few of the Cedarapids features that insure ease of operation with absolute accuracy of mix to speed production and make possible LOW BIDS.

CEDARAPIDS MODEL FA, also used on the Limestone job. In addition, Campanella & Cardi have a 3000-lb. Model E Plant, purchased in 1945, which is still producing.

IOWA MANUFACTURING COMPANY
Cedar Rapids, Iowa, U.S.A.



in ONE OPERATION with a WILLIAMS HAMMER MILL

WILLIAMS ALSO MAKES

Heavy-duty hammer mills in smaller sizes for all quarry operations; impact and roller mills for 200 to 325 mesh grinding; drier mills; air separators; vibrating screens; steel bins; complete "package" crushing and grinding plants.

Williams Hammer Mills are designed so as to eliminate the necessity of primary and secondary reduction units, to do away with their costly conveyors, drives, foundations, etc., and to crush power shovel loaded stone to commercial sizes *in one operation.* Savings of from 30% to 50% in crushing costs are not uncommon as well as additional savings of 25% to 75% in initial investment.

No matter what your job requires—2″, 1¼″, ¾″ or agricultural limestone—one Williams Heavy Duty Hammer Mill will do the job better, faster and cheaper.

WC51-6

WILLIAMS PATENT CRUSHER AND PULVERIZER CO.
802 St. Louis Avenue **St. Louis 6, Missouri**

OLDEST AND LARGEST BUILDERS OF HAMMER MILLS IN THE WORLD

up to 25% more production

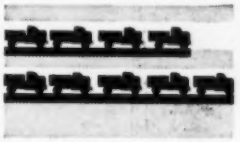
LINK-BELT SPEEDER with *Speed-o-Matic* controls

A real glutton in a gravel pit—up to 800 yards a day! This Link-Belt Speeder LS-51 keeps the gravel rolling fast, keeps operators fresh and alert, steps up production—and profits.

Speed-o-Matic **full hydraulic controls mean stepped-up production**

Speed-o-Matic Controls — fully hydraulic! You "feel" the load all the way. Simple, easy — fingers instead of muscles do work.

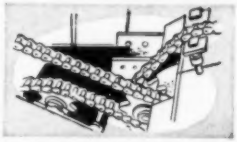
Eliminates up to 150 parts — cuts friction, no worn bushings, pins, links or clutch toggles to put you "down."



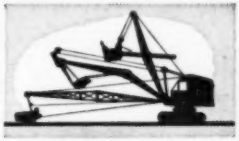
Up to 25% more production — fast operating cycle steps up output and profits. Effortless control keeps operator fatigue down.

Here are other LINK-BELT SPEEDER plus features that work for you

All-Welded Stress-Relieved Construction—extra strength without extra weight. Resists impact, twist. Field service simple.



Independent Chain Crowd — is fast and positive. Self-adjusting to all boom angles. No cables to break, slip or adjust.



Convertibility — designed for peak production as shovel, crane, dragline or trench hoe. Convert in field — quickly, easily.

Service—fast, efficient. Link-Belt Speeder Service is nation-wide—near you with replacement parts, factory-trained mechanics.

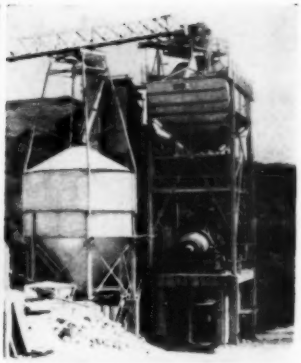
LINK-BELT SPEEDER
CORPORATION
12,701

Builders of the most complete line of shovels, cranes and draglines

CEDAR RAPIDS, IOWA

ERIE GTE 79 Cu. Yd. 4-Compartment PORTABLE type Bin for loading compartment trucks and truck-mixers.

ERIE Combination Truck-mixer and Concrete Products Plant—CTBS 267 Combination Aggregate and Cement Bin with 2 Cu. Yd. Combination AggreMeter —872 bbl. ERIE CSB Silo Cement Bin—air operated gates controlled from the ground—operating in SOUTH CAROLINA.



ERIE CTBS 267 Cu. Yd. Combination Aggregate and Cement Bin with 3 yard AggreMeter. Also ERIE M-3 (492 bbl.) Cement Bin and ERIE 2360 bbl. ground storage Cement Bin, interconnected. A Central-Mix Dual Mixer Plant in PUERTO RICO.

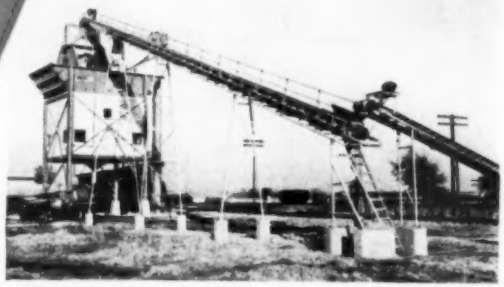
ERIE CTB 160 Cu. Yd. connected to ERIE 492 bbl. Cement Bin—operating in MAINE.

ERIE *Combines*

STANDARD UNITS to meet SPECIAL NEEDS . . .

Consult with Erie engineers to get exactly the type of batching plant that will meet your needs and your pocketbook. Our pioneer experience in the design and manufacture of all types of Bins, AggreMeters, Conveyors, Elevators and Controls for aggregate and cement handling is at your service. New developments in air and electronic controls for filling bins and batching materials speed operations. Outline your requirements and the output you desire and we'll show you how to combine the proper Erie units most economically. Let's have your problem.

ERIE CTBS 118 Cu. Yd. Combination Aggregate and Cement Bin. Other sizes 98, 202 and 267 Cu. Yd.



ERIE Central Mix Plant—CTBS 267 Cu. Yd. (3 Yd. AggreMeter and E5 Cement Elevator fed by Undertrack Screw—operating in ARKANSAS.

ERIE

STEEL CONSTRUCTION COMPANY

623 GEIST ROAD • ERIE, PENNSYLVANIA

FAST FEEDER

EVERY HOUR, eight hours a day, the Utah Sand & Gravel Corp. at Butler Ville, Utah, produces 175 tons of concrete and plaster sand. It takes a lot of gravel to feed a plant that busy. Rex S. Band, Plant Superintendent, depends on a "Caterpillar" D8 Tractor with matching "Cat" No. 8U 'Dozer to keep the gravel coming.

This fast, tough team takes only a minute and a half to move six yards of gravel a distance of 250 feet. So it's no wonder that Superintendent Band says, "We've always been partial to 'Caterpillar'." His company also operates a "Cat" No. 28 Ripper, five Diesel Engines and a Diesel Electric Set.

Good maintenance practice will keep *your* equipment in shape for rough duty, too. Consult your Operator's Instruction Book often. And your "Caterpillar" Dealer's service is invaluable in times like these, when machinery must work harder and last longer. "We had no down-time during World War II," Superintendent Band reports, "because our Dealer carried us through in grand shape. 'Caterpillar' service is A-1. We find it's the best wherever we go."

CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS

CATERPILLAR

REG. U. S. PAT. OFF.

DIESEL ENGINES
TRACTORS • MOTOR GRADERS
EARTHMOVING EQUIPMENT

you can't beat progress...

These two 4-yd. electric shovels have played a big part in the successful change to open pit mining at Inspiration Consolidated Copper Mines at Inspiration, Arizona. A third P&H will provide increased production to meet the growing need for copper.

ELECTRIC P&H SHOVELS

All the advancements in electrical digging made by P&H have one common purpose — *lower tonnage costs.*

Here's *faster operation* with such P&H improvements as Magnetorque* Hoist Drive, stepless power regulation . . . independent propel for faster move-ups.

Here's *steadier digging* — many of the old mechanical devices which caused trouble and delay are eliminated — no slip friction clutches; no sliding gears to shift, no electrical contactors in main control system.

Here's *lower maintenance cost* — all-welded construction originated by P&H — induction-hardened gearing — filtered air cab.

When you put these, and other progressive P&H ideas to work, you're sure of lower tonnage costs in all kinds of open-pit operations.

P&H leads the field in electric shovel developments.

*T. M. of Harnischfeger Corporation for electro-magnetic type clutch.

P&H ELECTRIC SHOVELS
4451 W. National Avenue
Milwaukee 14, Wisconsin
HARNISCHFEGER CORPORATION

Every third P&H Electric Shovel sold is a repeat order

EXCAVATORS • OVERHEAD CRANES • HOISTS • ARC WELDERS AND ELECTRODES • SOIL STABILIZERS • CRAWLER AND TRUCK CRANES • DIESEL ENGINES • CANE LOADERS • PRE-ASSEMBLED HOMES

FREE POWER

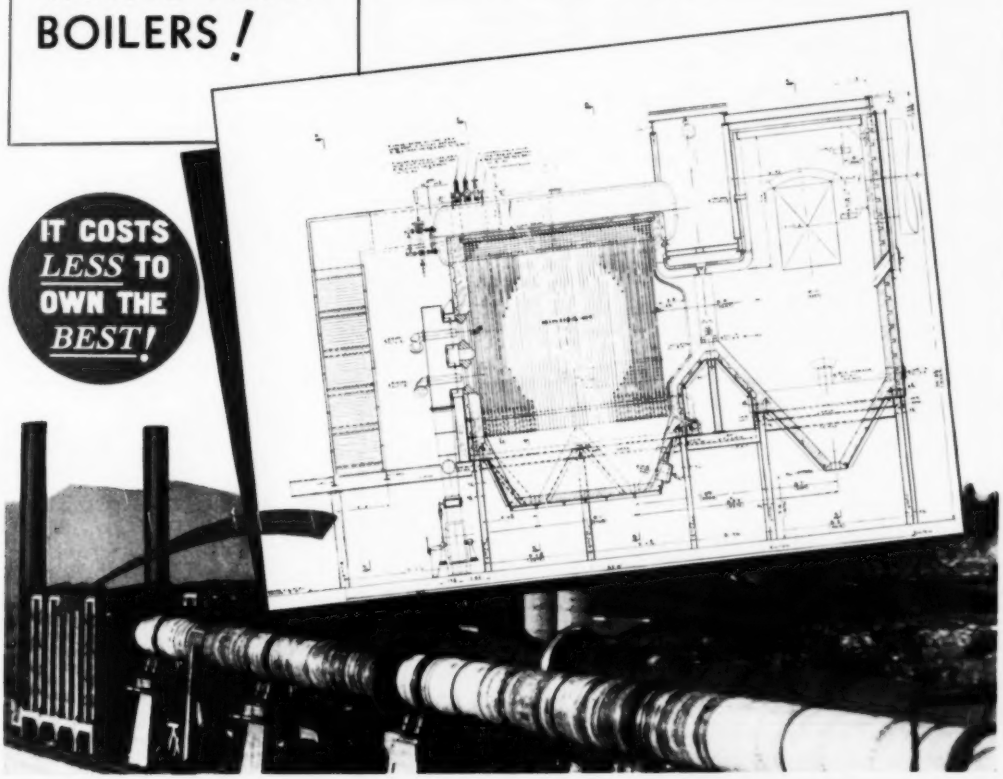
ACCOMPLISHED WITH KVS WASTE HEAT BOILERS!

Let KVS design a waste heat boiler for your plant to utilize the heat that is normally wasted up the stack . . . turn this valuable heat into power . . . save fuel, provide FREE power for the manufacture of cement, lime, dolomite etc., etc. . . . reduce your operating costs.

Usable heat, ordinarily wasted at the end of the kiln shell, can be converted into steam for process or power. A money-saving application that quickly pays for itself. Readily installed in any plant. The sooner you start — the sooner you save.

Consult our engineering department for details.

IT COSTS *LESS* TO OWN THE *BEST!*



KENNEDY-VAN SAUN ENG. & MFG. CORP.

TWO PARK AVENUE NEW YORK 16, N.Y.

FACTORY: DANVILLE, PA.

IT COSTS LESS . . . TO OWN THE BEST!

KENNEDY SWING JAW CRUSHERS

Convert large size rock into Easy-to-Handle Screen Sizing Swiftly and Economically.

KVS heavy duty Swing Jaw Crushers are engineered, and built, to handle large size rock. Frames are built of Herculite Steel or annealed open hearth cast steel; these crushers exert brute force where it counts . . . Convert raw materials into easy-to-handle screen sizes.

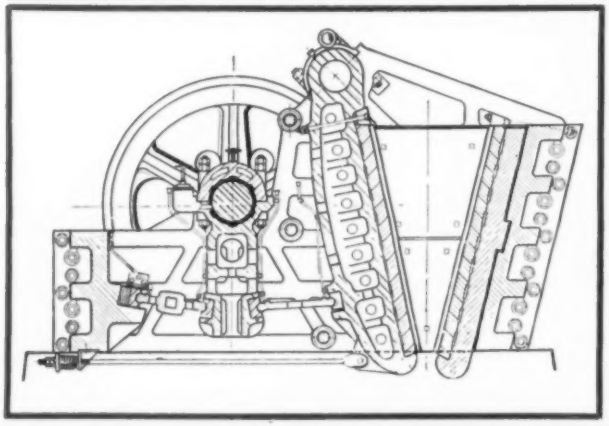
One stationary, one swing jaw, set at the same angle, divide the crushing impact equally. This means much less power for swinging and crushing . . . a more uniform size product at a lower cost per ton and greatly reduced jaw wear.

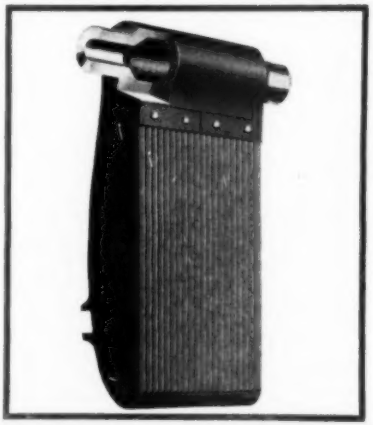
Jaw plates are reversible, end for end and from stationary to swing jaw, providing double life by cutting wear in half. Easy to remove, easy to reset. Swing jaw, including the bearings, are made of annealed open hearth cast steel and have been in use for 10 years with no failures. Kennedy Swing Jaw Crushers are built in 40 different sizes . . . up to 66" x 96" . . . to meet every need of the aggregate industry. Chemically tested steel plus superior engineering make them the finest crushers money can buy.

Send for bulletins describing all KVS crushers. There's a size to serve *your* needs.

FEATURES THAT DISTINGUISH KVS SWING JAW CRUSHERS

- Crusher openings from 7 inches to 66 inches.
- Sizes from 6000 to 600,000 pounds. Swing jaw and shaft cast integral. Cannot loosen.
- Frames built of Herculite Steel, or annealed open hearth cast steel, with a tensile strength up to 60,000 lbs. per sq. inch.
- Reversible, end for end, or from stationary to swing jaw. Swing Jaws provide double usual life.





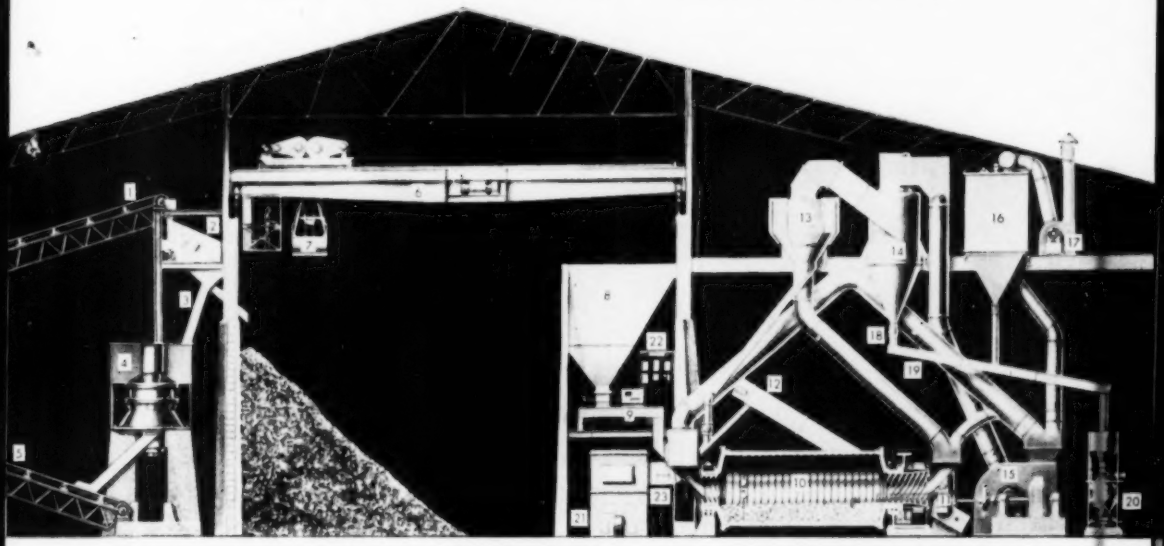
KENNEDY-VAN SAUN MFG. & ENG. CORPORATION
TWO PARK AVENUE NEW YORK 16
FACTORY: DANVILLE, PA.

KENNEDY STRATIFIED AIR SWEPT TUBE MILL SYSTEM

(Patents Pending)

WITH DUAL CLASSIFICATION

for raw stone, ore and clinker grinding lowers grinding costs...reduces power consumption...cuts maintenance costs



1 Belt conveyor—feed to crusher
2 Vibrating screen
3 Oversize return chute
4 Gearless gyratory crusher
5 Belt conveyor—closing crusher circuit
6 Traveling crane
7 Clamshell bucket
8 Mill feed hopper
9 Weighing feeder
10 Stratified Air Swept Tube Mill
11 Cross conveyor for oversize
12 Return conveyor for oversize
13 Radial flow classifier
14 Cyclone collector
15 Mill exhauster
16 Dust filter
17 Dust filter exhauster
18 Rotary air locks
19 Finished material conveyor
20 Finished material to storage silo
21 Hot air furnace
22 Instrument and control cubicle
23 Automatically controlled tempering air damper

The Kennedy Stratified Air Swept Tube Mill System produces 94% plus through 325 mesh when grinding clinker 2 inches and finer. It dries and grinds simultaneously and air-cools cement while grinding clinker.

In our test plant, when grinding to 92% through 200 mesh, 25 tests showed an increase in the capacity of the Tube Mill by the use of Dual Classification of from 29% to 52%.

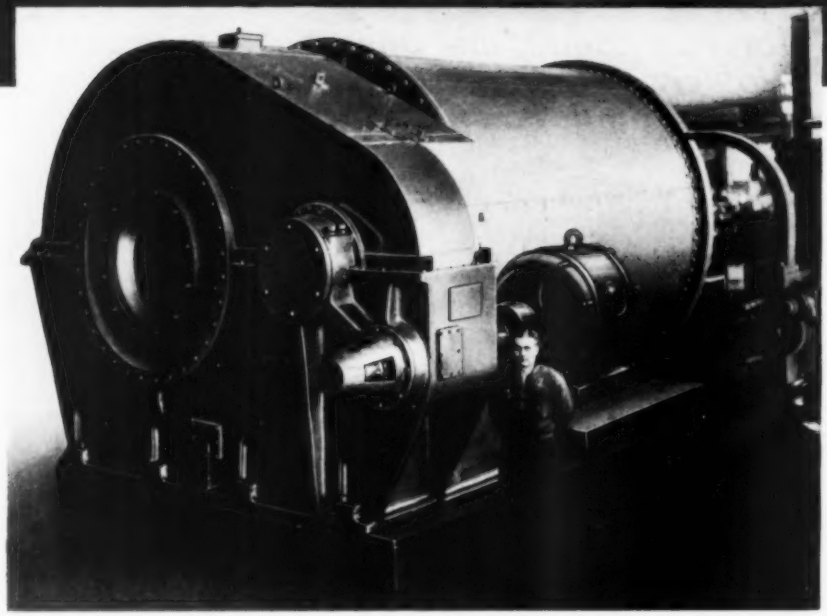
The Kennedy Stratified Air Swept Tube Mill not only grinds raw material having up to 20% moisture, but becomes a combined dryer, grinding mill and separator, thereby serving a three-fold purpose.

Marked economy of operation sets the Kennedy mill apart. By comparison, the savings effected in power consumption, wear-and-tear and man-hours, more than pay the initial installation cost within a ten-year or shorter period. Send for blueprints and operating data. They show why users say "It Costs Less To Own The Best."

KENNEDY-VAN SAUN MFG. & ENG. CORPORATION

TWO PARK AVENUE, NEW YORK — PLANT: DANVILLE, PA.

IT COSTS *LESS* TO OWN THE BEST!



KENNEDY 10' x 18' AIR SWEPT TUBE MILL FOR CLINKER GRINDING

FEATURES

Hourly capacity:
21 tons — 112 barrels

•

Fineness:
With 200-mesh, 98.7% minus
With 325-mesh, 94.1% minus

•

Specific surface, 2100

•

800 HP synchronous motor uses only 750 HP

•

Exhausters equipped with 200 HP motors using only 145 HP

•

Above capacities obtained with clinker ranging in size up to 2"

Specifications of all types of KVS Mills available on request.

Marked economy of operation distinguishes the new Kennedy 10' x 18' Air Swept Tube Mill. Its large capacity, speed and low power consumption shown in the adjoining box invite comparison.

Designed for either raw or finish grinding, this mill reduces clinker to a fineness of 98.7% minus through 200-mesh with minimum power consumption . . . it's a TOP rating.

Exclusive KVS built-in features include integral gear drive connected directly to drive shaft; shaft carried in roller bearings cannot be misaligned; all gears and bearings automaticlly oil sprayed.

In design and construction this is the most modern tube mill on the market. In use all over the world, it is proving its worth under every operating condition. Users say, "It Costs Less To Own The Best" when you specify KVS.

KENNEDY-VAN SAUN MFG. & ENG. CORPORATION

TWO PARK AVENUE, NEW YORK 16, N. Y. — ALLENTOWN, PA.

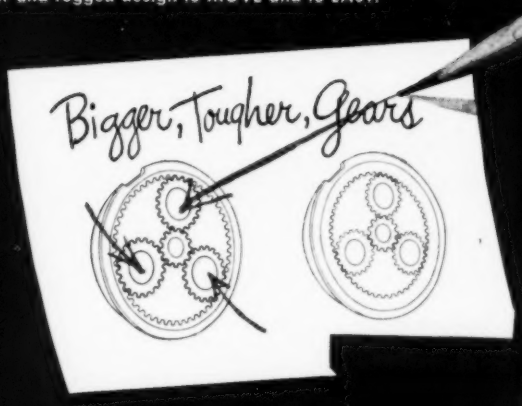
STERLINGS

GET IN THERE AND *MOVE*

With the Super Traction Planetary Rear Axle

You know it's going to be rough and tough going. But STERLINGS are built for it. For MORE work under all kinds of operating conditions.

When traction is poor, wheel spinning and slippage is reduced to a minimum . . . STERLINGS won't bog down because job-engineered Super Traction Differential divides power to each rear wheel exactly as road and load conditions demand . . . has the power and rugged design to MOVE and to LAST.



Here's why STERLING Gets More Work Done

Husky planetary type rear axle. Gears have massive tooth construction and axle shafts are exceptionally large in diameter. Housing is triple alloy heat treated steel assuring maximum strength without excessive weight.

Sturdy front axle with increased load capacity.

Rear main and auxiliary springs cushion shock and strain, increase tire life, reduce driver fatigue.

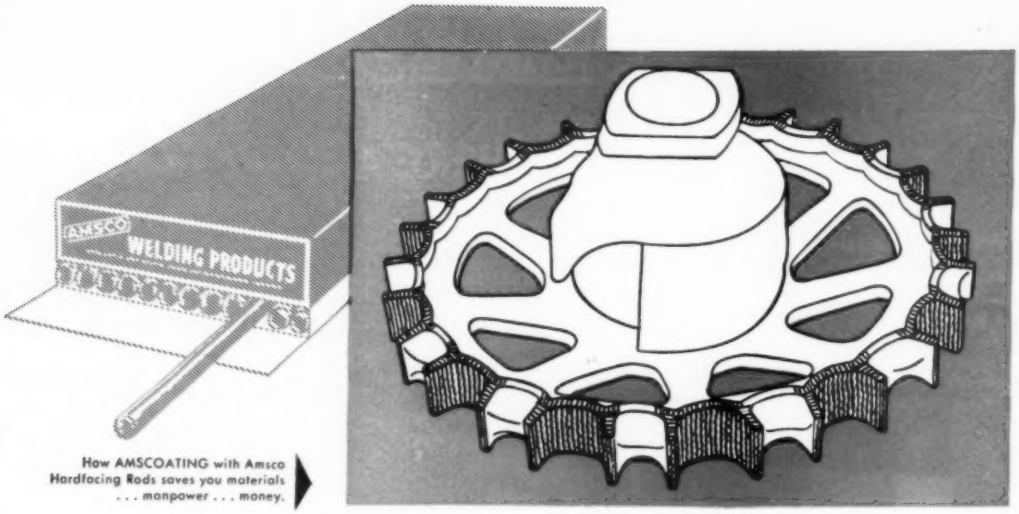
Power steering and shorter wheelbase provide better maneuverability, improve schedule time.

Alloy steel heat treated frame with wood insert plus bolted construction means longer frame life economical maintenance.

Sterling White

STERLING DIVISION
The White Motor Company • Milwaukee 1, Wisconsin

See Your Nearest STERLING-WHITE Representative



How AMSCOATING with Amsco Hardfacing Rods saves you materials . . . manpower . . . money.

These teeth take bites out of repair costs!

AMSCOATING can make old Tractor Drive Sprockets last 3 times longer than new.

Here's another way to beat the high cost of replacements, down-time and maintenance . . . AMSCOATING the teeth on Tractor Drive Sprockets. Time after time service records have shown that AMSCOATING of sprockets results in these dollar-saving advantages:

1. ***On an average — 3 times the service life of a new, unhardfaced sprocket.***
2. ***2 out of 3 sprocket changes completely eliminated . . . far less down-time, less maintenance . . . more equipment out of the shop and on the job.***

To top it off, sprocket replacements can practically be eliminated. An AMSCOATED sprocket can be reclaimed over and over again . . . *at about half the cost of a new one!*

Get all the facts on how to make these big savings . . . write today for instruction sheet on AMSCOATING sprockets, and the name of your nearest AMSCO Distributor.

AMSCOATING...stands for control of wear by Hardfacing...

Hardfacing rods—and recommendations for their use—are as sound as the manufacturer who makes them. AMSCO has been fighting wear for a half-century—first with Manganese Steel, and later with AMSCO Hardfacing Products.

If you have a problem of wear caused by impact, abrasion, heat or corrosion . . .

Find out how AMSCOATING can save you materials . . . manpower . . . money!

AMSCOATING

THE RIGHT WAY TO SAY HARDFACING

AMERICAN Brake Shoe COMPANY

AMERICAN MANGANESE STEEL DIVISION

396 EAST 14th STREET • CHICAGO HEIGHTS, ILL.

Other Plants: New Castle, Del., Denver, Oakland, Cal., Los Angeles, St. Louis. In Canada: Joliette Steel Division, Joliette, Que.
Amsco Welding Products distributed in Canada by Canadian Liquid Air Co., Ltd.

1

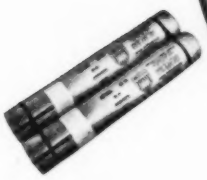
2

3 see how easy it can be...

with AMERICAN'S new 25 pound container-cartridge

AMERICAN CYANAMID COMPANY

EXPLOSIVES



Fastened together in units of two each, these new twenty-five pound container-cartridges are unloaded quickly, ready to use immediately.

Without any of the wasted time or motion of older methods, American Explosive's new cartridge is loaded easily and directly into each hole.

Ready to shoot . . . note the clearness of the area, no boxes to clear away . . . the entire loading operation has been reduced to a minimum of time and labor.

And besides these special advantages you can rely on Cyanamid's American Explosives for *quality and dependability*, backed by strict laboratory control and modern methods of production.

For efficient, low-cost blasting results, make your next order American . . . available from plants and distributing magazines in key spots throughout the country.

Capable Field Engineers Are Available at Your Call

High Explosives • Permissibles • Blasting Powder • Blasting Accessories

AMERICAN *Cyanamid* COMPANY

Explosives Department

30 ROCKEFELLER PLAZA • NEW YORK 20, N. Y.

SALES OFFICES: PITTSBURGH, PA. • BLUEFIELD, W. VA. • SCRANTON, PA. • CHICAGO, ILL. • POTTSVILLE, PA. • MAYNARD, MASS.

Still going strong after a quarter century. That's the record of the older motors shown in the above illustration. And when more motors were needed South Dakota State Cement again turned to Allis-Chalmers.

ALLIS-CHALMERS

Synchronous MOTORS

All these motors have the tough job of driving wet raw grinding ball mills. The two installed in 1924 are 400 hp, 1.0 pf, 180 rpm. The 1950 motor and a duplicate not shown are 350 hp, .8 pf, 180 rpm.

Designed for low starting kva, the motors drive the mills through magnetic clutches. The mills themselves and the Type H full-voltage starters were also built by Allis-Chalmers.

If you could examine the motors in this Rapid City installation, you would soon discover some of the reasons for their long life and low maintenance. You would find liberally proportioned bearings for trouble-free operation. You would find field coils securely supported and protected by adequate pole collars. And you would find many other important features.

But there would be many features you would not be able to see. You wouldn't see the testing that assured satisfactory steel for the stator laminations. Nor the precisely controlled processing that results in long insulation life. Nor any of the many ways in which each motor is engineered to fit its specific application.

We suggest that you get a copy of our illustrated Bulletin 05B7648. In a few minutes, this *new* bulletin will show you why you'll be money and years ahead with Allis-Chalmers low-speed pedestal-bearing synchronous motors on the job. Ask your nearby A-C representative for a copy, or write to Allis-Chalmers, Milwaukee 1, Wisconsin. A-3533

ALLIS-CHALMERS

A-C ALLIS-CHALMERS

Farrell-Cheek

PRESENTS A NEW CONCEPTION OF ALLOY STEEL CASTINGS IN MODERN INDUSTRY • • •

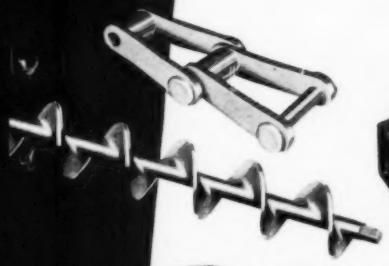
• • • because when you buy a Farrell-Cheek casting you buy the benefits of all the 42 years of Farrell-Cheek experience in supplying fine cast steels. You receive engineering service that assures accurate design, according to your specifications. You get the benefit of completely modern facilities that deliver quality cast steel parts . . . carbon and alloy • • • unmachined or completely finished.

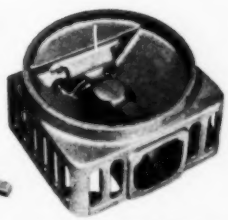
This combination of expert engineering and quality production has overcome many difficult problems. Intricate core work — thin sections — special steels — all point to the ultimate use of Farrell-Cheek steel castings. We developed special alloys like Farrell's "85" and "Hard Edge" that combine high yield point, toughness, and rigidity with resistance to wear and excellent machinability to give you a truly tailor-made product.

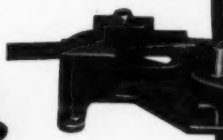
You save in many ways with Farrell-Cheek castings. In initial cost, since expert production is more economical. From longer service life, made possible by Farrell-Cheek steel alloys. Our castings stay on the job longer, reduce the worry and cost of shut-downs for parts replacement.

Perhaps Farrell-Cheek can bring similar benefits to your plant by supplying steel castings for your special production or maintenance problem. We offer you our experience, our engineering knowledge, our modern plant facilities. This emphasis on experience and engineering may be a new conception to you. If so, it's a conception that we urge you to become acquainted with. It's responsible for many improvements in the plants and products of our customers. It's the reason Farrell-Cheek is the "Finest Name in Cast Steel."

WE WOULD BE HAPPY TO SERVE YOU







FARRELL - CHEEK STEEL CO.

MANUFACTURERS OF HIGHEST QUALITY ELECTRIC FURNACE CARBON AND ALLOY STEEL CASTINGS

FARRELL'S CARBON STEEL CASTINGS
FARRELL'S HARD EDGE STEEL CASTINGS
FARRELL'S "85" STEEL CASTINGS

RAILROAD CASTINGS
Locomotive and Car
R. R. Specialty Castings.

ELEVATOR, CONVEYOR PARTS
Sprockets, Traction Wheels, Chains, Buckets, Rollers, Idlers.

BUSHINGS
Carbon and Alloy Steels Machined, Hardened, Ground.

CRANE WHEELS
Overhead, Gantry, Monorail, Ingot Car, Charging Machine.

GEARS AND PINIONS
"True Tooth" Gears and Pinions, Sheaves and Wheels.

SPECIALIZED CASTINGS
Light Section Castings.

STOKER PARTS
Feed Screws, Furnace Tools, Flanged Pipe, etc.

HEAVY HARDWARE
Wire Rope Fittings, Choker Hooks, Bar Benders, Cutters.

YOUR INQUIRY WILL PROMPTLY BRING DETAILED INFORMATION PERTAINING TO ANY OF THE ABOVE FARRELL-CHEEK PRODUCTS

SANDUSKY, OHIO U.S.A.

95% efficient

UNDER DIFFICULT JOB CONDITIONS

for F. Whitcomb

Tournarocker makes short, 90° turn out of cut onto main haul road . . . travels at high speeds through open traffic and up 5 to 6% grades on 1½-mile haul to dump. These 2 rear-dump, electric-control haulers are Whitcomb's latest LeTourneau units. He bought his first LeTourneau dirtmovers in 1937 . . . has been a regular repeat buyer since then.

NEW C Tournarockers now have 18-ton body increasing capacity by 12½%. Prime movers with Tournamatic transmission and torque converters are also available, as well as the "Roadsters" with their heavy-duty, sliding-gear transmission. Performance figures reported here were made with earlier 16-ton Roadster units.

Tournamatic, Tournarocker—Trademark R243pq

LeTOURNEAU LET EQUIPMENT

HIGH-SPEED, RUBBER-TIRED HAULING • EXCAVATING • LIFTING EQUIPMENT

Electro-heated body speeds sub-zero dumping. To speed completion of the 24-ft. sub-grade for 2.8 miles of Rt. 103 along Lake Sunapee, Frank Whitcomb worked Tournarockers well into the winter. Electrical induction heating of 'Rocker body kept load from freezing . . . allowed fast, free dump even in sub-zero weather. Other machines, unheated, had to be cleaned out by a small pull shovel.

Construction Corp.

2 C-TOURNAROCKERS move 51 to 56 pay yds. hourly on 3-mile cycles through traffic

Frank W. Whitcomb Construction Corp. of North Walpole, New Hampshire, have a lot of solid rock in the 245,000 yds. of excavation they're handling on relocation of 2.8 miles of Rt. 103 near Newbury. Even the common earth is hard to handle because of large boulders. Hauls are long . . . averaging 1½ miles one-way over existing highway through heavy, open traffic.

Load 10 pay yds. of broken rock ...up to 15 loose yds. common earth

To speed production under these tough conditions, Whitcomb has assigned most of the difficult hauling to 2 high-speed, rear-dump, 16-ton C Tournarockers. Teamed with a 1½-yd. shovel, each "C" carries 10 pay yards of high-void broken rock per load . . . up to 15 loose yards of common earth per trip . . . makes a 3-mile cycle of load, haul, dump and return every 18 to 19 minutes. In a typical 9-hour day, each Tournarocker delivers 25 loads over rutted, steep ground to the dump . . . in a 7-hour day on this length haul, figures show each "C" moves 18 to 19 loads. That's a total average production for the 2 rigs of 51 to 56 pay yards of rock per hour . . . 75 to 80 loose yards of common earth hourly.

"We're very well satisfied," says Supt. John T. Fox. He also stated that Tournarockers have been about 95% efficient under these difficult job conditions.

These units have been proved thoroughly on tough jobs like this around the world. Investigate Tournarocker's ability to speed up your pit and quarry operations. They have many unique advantages, speeds to 35 m.p.h., capacity from 9 to 30 tons. Write or ask your local LeTourneau Distributor for facts and figures.

R. G. LeTOURNEAU, INC., Peoria, Illinois

"EUC" PERFORMANCE Pays Off

IN MINES and QUARRIES

"Eucs" are designed and built for moving coal, rock, ore, overburden and heavy excavation at the lowest cost. The simple but rugged construction of Euclids, combined with large capacity, ample power and speed, provide efficient off-the-highway hauling of practically any material.

Euclids are standard equipment in many leading open pit mines and quarries, and on construction and industrial work. Owners know that Euclid staying power and continuous operation result in more loads hauled in less time at lower cost.

Ask your Euclid distributor for data on quarry or open pit jobs similar to yours. There is a Euclid to meet your requirements for off-the-highway hauling work.

Rear-Dump Euclids—Capacity from 10 to 34 tons—diesel engines from 125 to 400 h.p., spring mounted or semi-rigid drive axles—top speed loaded up to 35.7 m.p.h.

MORE LOADS PER HOUR— MORE PROFIT PER LOAD

The EUCLID ROAD MACHINERY Co., Cleveland 17, Ohio

EUCLIDS

coverage alone is not enough

In packaging, your product requires more than *just* coverage. It requires a container that assures the best protection for your product, the best acceptance of your product. Your Chase Salesman is technically trained to study your packaging requirements—and to recommend the specific container that is designed to meet your particular needs.

CHASE Multiwall Paper Bags

- Multiwall Paper Bags, Single Wall and Duplex Paper Bags • Saxolin open mesh bags • Cotton bags of all kinds • Lined and Combined bags, liners and specialties

for Better Bags...Better Buy Chase

CHASE BAG CO. GENERAL SALES OFFICES: 309 W. JACKSON BLVD., CHICAGO 6, ILL.

BOISE • DALLAS • TOLEDO • DENVER • DETROIT • MEMPHIS • BUFFALO • ST. LOUIS • NEW YORK • CLEVELAND • MILWAUKEE
PITTSBURGH • KANSAS CITY • LOS ANGELES • MINNEAPOLIS • GOSHEN, IND. • PHILADELPHIA • NEW ORLEANS • ORLANDO, FLA. • SALT LAKE CITY
OKLAHOMA CITY • PORTLAND, ORE. • REIDSVILLE, N. C. • HARLINGEN, TEXAS • CHAGRIN FALLS, O. • WORCESTER, MASS. • CROSSETT, ARK. • SAN FRANCISCO

CALL ON STANDARD

A ten-foot diameter *Standard* kiln is pictured above, ready to be shipped to its Louisiana destination. Lower photo shows kiln shell mounted on flat cars. Another car carries the enclosing furnace, trunnions and running gear.

Although by no means the largest kiln to be completed by *Standard*, it is a good example of our ability to design and build rotary processing equipment of any size—LARGE or SMALL.

In this, our 50th Anniversary Year, we take pride in the fact that for precision engineering and fabrication of heavy duty machinery, the call is so often for *Standard*.

Rotary KILNS
COOLERS
CALCINERS
DRYERS
ANY size
ANYwhere

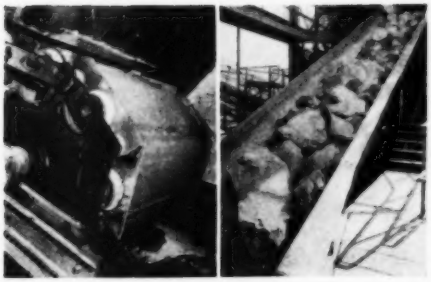
STANDARD

WRITE FOR COMPLETE DESCRIPTIVE LITERATURE

STANDARD STEEL CORPORATION

5006 Boyle Ave., Los Angeles 56 • 123-6 Newbury St., Boston 16

It pays to choose a feeder that fits your operating requirements

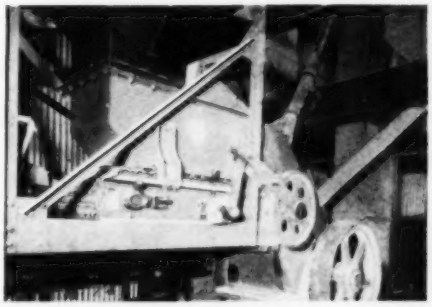


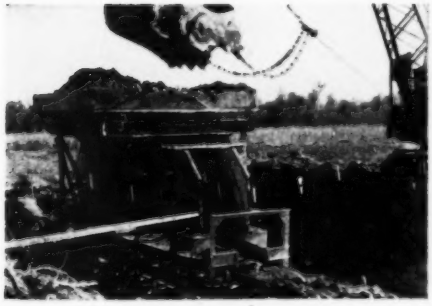
FOR HEAVY IMPACT SERVICE

Where material consisting of heavy, sharp or abrasive large lumps must be handled, Link-Belt Heavy Duty Apron Feeders are the answer. Severe service—including high temperature and heavy impact—causes no trouble for these rugged feeders. Four designs meet varying operating needs. Widths from 18 to 60 in.

FOR ACCURATE FEEDING

The Link-Belt Apron Feeder at right provides a uniform flow for smaller tonnages. Relatively short pitch chains and apron pans are employed. The drive is arranged to provide easy adjustment of feed to the crusher, permitting great flexibility to meet varying operating conditions.





FOR SMOOTH, UNIFORM FLOW

Smooth operation and uniform discharge are assured with Link-Belt Belt Feeders. Free-rolling roller bearing idlers require less lubrication and adjustment. Adjustable skirting provides seal to prevent leakage. Recommended for all materials except those that are hot, fluffy or exceptionally large lump. Belt widths from 18 to 48 in.

LINK-BELT makes a complete feeder line . . . offers the right one for your requirements

In addition to the types above, Link-Belt builds bar flight, screw, oscillating, rotary table, rotary vane and reciprocating feeders. But Link-Belt offers more than a complete quality line to help you get the most efficient application. Link-Belt engineers base their recommendations upon a working knowledge gained in hundreds of plants over many years. Not only for feeding — for conveying, washing, classifying and screening as well — you can rely on Link-Belt all the way.

LINK-BELT

CONVEYING and PREPARATION MACHINERY

LINK-BELT COMPANY: Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices in principal cities.

12 505

ABRASION—VIBRATION—FATIGUE

meet their match in

Super-Tempered

Precision Space Screens

Here's a troublesome threesome that spells early wear and untimely end for ordinary screens. Costs you plenty, too, in disrupted production and more frequent screen replacement.

It's a different story when you put Super-Tempered Precision Space Screens against these destructive forces. Long-wearing Super-Tempered Screens give you the advantage of extra durability that means less downtime... longer, more accurate service...greater tonnage output at lower cost. And here's why:

First: Super-Tempered Precision Space Screens stay tight and maintain accurate uniform spacing because they're crimped and woven extra tightly on powerful hydraulic looms of exclusive design.

Second: They give long-lasting resistance to abrasion and fatigue because they're made of special super-tempered steel rolled and heat-treated in our own plants to assure the correct degree of hardness and ductility.

For additional information, write or phone our nearest sales office or consult your classified telephone directory.

THE COLORADO FUEL & IRON CORPORATION—Denver, Colorado
THE CALIFORNIA WIRE CLOTH CORPORATION—Oakland, California
WICKWIRE SPENCER STEEL DIVISION—Atlanta • Boston • Buffalo • Chicago
Detroit • New York • Philadelphia

SUPER-TEMPERED
PRECISION SPACE SCREENS
PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL & IRON CORPORATION

CF&I

NEW

THE WORLD'S BIGGEST LOADING SHOVEL

MARION 191-M
10 cubic yards

- Loads trucks in the 50-ton class in 3 or 4 passes to meet big haulage problems.
- Big enough to load gondola rail cars quickly.
- Greater travel speed and maneuverability than most of smaller machines.
- All-electric or diesel electric power; Ward-Leonard control on both.
- A 10 cu. yd. heavy-duty shovel with small-machine cycle time.
- Largest two-belt crawler shovel built.

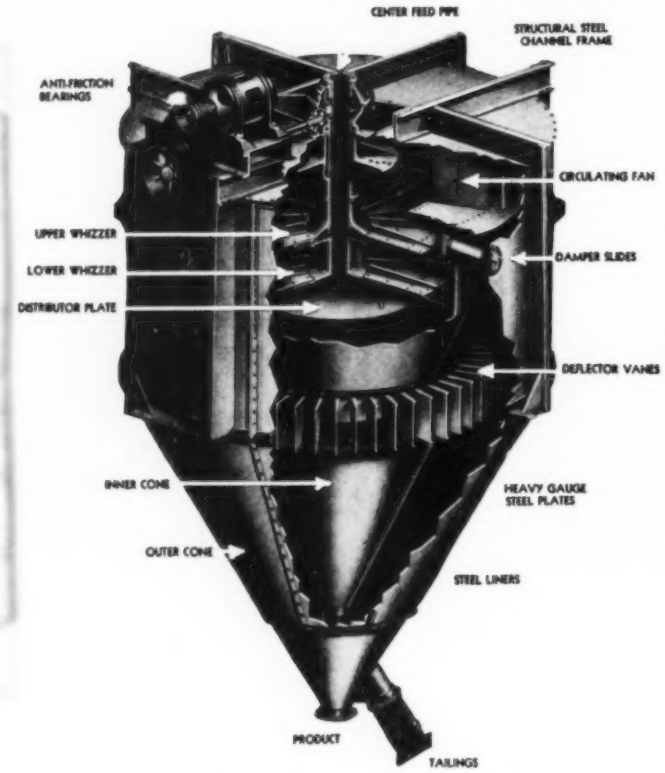
MARION POWER SHOVEL CO.
MARION, OHIO, U. S. A.

OFFICES AND WAREHOUSES IN ALL PRINCIPAL CITIES

From 3/8 cu. yd. to 45 cu. yds.

Classifying all types of

NON-METALLIC MINERALS



DOUBLE WHIZZER SEPARATOR

For extreme fineness materials. Provides easy control for making standard cements or high early strength grades. Details show carefully engineered construction throughout.

RAYMOND builds a modern line of Mechanical Air Separators, featuring the *Whizzer* principle of classification, for the economical production of high-specification materials in the cement, lime, gypsum and fine-aggregate industries.

Raymond Separators are available with single whizzer or double whizzer, for either medium or extreme fine grades, or for de-dusting operations to remove objectionable fines. These units are made in nine different sizes to meet various capacity requirements. There are also Units for small output and laboratory use.

The following are a few of the products classified with Raymond Separators.

CEMENT
Raw Mix and Clinker

GYPSUM
Plasters, Kettle Products

ARTIFICIAL
LIMESTONE SAND
SILICA SAND, FLINT
QUARTZ, FELDSPAR
GRAPHITE, TALC
SODA ASH
PHOSPHATE MATERIALS
CHEMICALS
PIGMENTS
POWDERED METALS
FEEDS AND FOODS
SPECIAL MATERIALS

COMBUSTION ENGINEERING

Refer your separating problems to Raymond engineers to insure the proper equipment for your job.

Raymond
PULVERIZER DIVISION

with

RAYMOND WHIZZER SEPARATORS

Typical Applications

CEMENT. Performance figures show that the Raymond Double Whizzer Separator is outstandingly successful in the Cement Industry for closed circuit grinding, classifying both raw mix and cement clinker. Great flexibility is assured with these Units in fineness control. With the proper setting of the grinding mill, the change from standard to high early strength cement can be made externally and while the Separator is running.

●

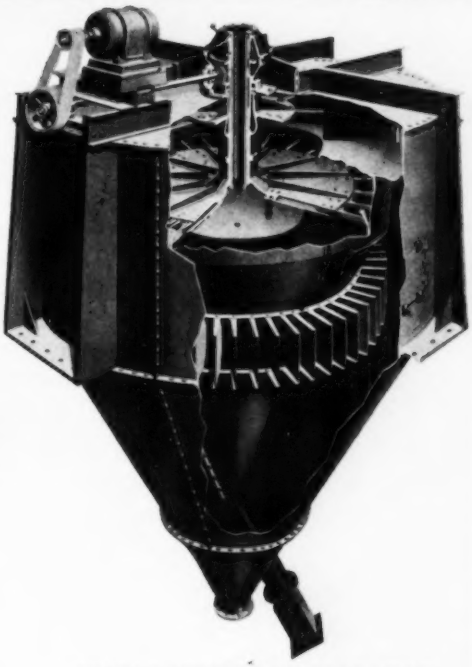
ARTIFICIAL LIMESTONE SAND. For the production of limestone sand, with the proper specification of granular sand material, the use of the single whizzer separator is the most satisfactory way for removing the objectionable material finer than 160 and 200 mesh. Other de-dusting operations involve removing the fine dust from sea coal.

●

SILICA FLOUR. Special abrasion-resistant Raymond Separators do an excellent job in classifying such highly abrasive materials as silica sand, flint, feldspar, and quartz. As a result of the special construction, Raymond Separators show substantial savings in terms of greatly reduced repair expense and much longer runs without shutdown.

●

WHIZZER SEPARATION is the answer to many difficult classification problems. Tell us your requirements.



SINGLE WHIZZER SEPARATOR

For medium fine classification, and for de-dusting operations.

30-INCH SEPARATOR

For small commercial use or laboratory applications.

LABORATORY SEPARATOR

10-Inch diameter unit for experimental work and product control.

-SUPERHEATER, INC.

1321 North Branch St., Chicago 22, Illinois

Sales Offices in Principal Cities

FOR THE NEWEST, FINEST TRACTOR LINE ON EARTH

A Complete New Line of Allied Equipment

. . . Each combination designed, manufactured and serviced as a UNIT

Four great names in the industry — BAKER, CARCO, GAR WOOD, TRACTOMOTIVE — now bring you the finest selection and the most up-to-date equipment ever built for crawler tractors. Developed in full cooperation with Allis-Chalmers, this new line is matched to the new A-C tractors . . . makes it possible for you to handle a wider variety of jobs faster, easier and at lower cost.

The design of this equipment — mounted and drawn — takes full advantage of the balance and outstanding performance capacity of the tractors. Each unit, like the new tractors, is BUILT TO TAKE IT, EASY TO OPERATE, EASY TO SERVICE, and *most important*, DESIGNED FOR TODAY'S JOBS.

See your Allis-Chalmers dealer today for the full story. Remember, he sells and services both the tractors and the complete new line of approved Allied equipment.

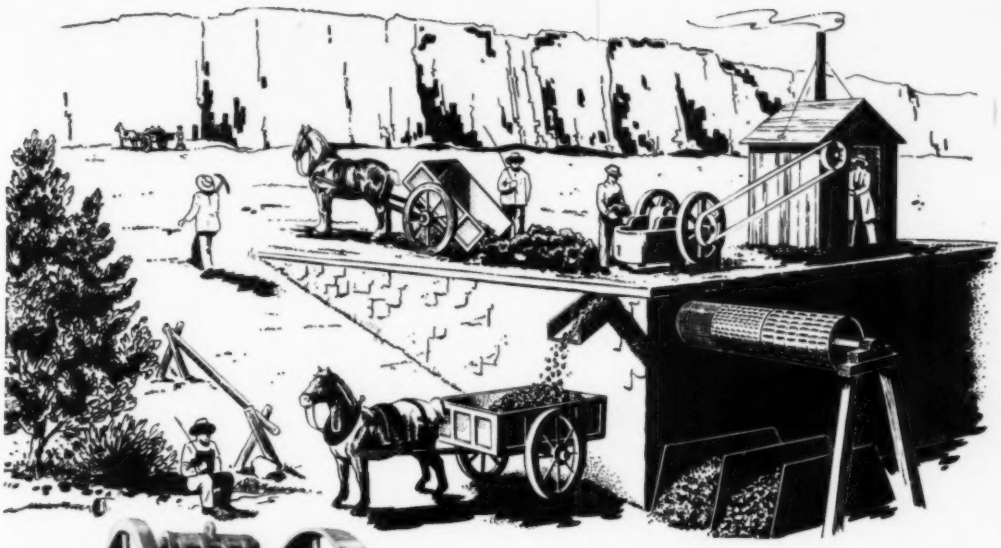
Years Ahead

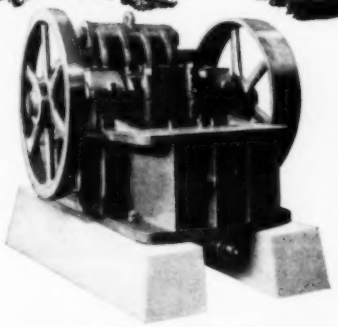
Each of the new Allis-Chalmers crawlers provides a new yardstick for rating tractors. Each sets new standards for performance, strength, servicing, operation.

HD-5	40.26 drawbar hp.; 11,250 lb.
HD-9	72 drawbar hp.; 18,800 lb.
HD-15	109 drawbar hp.; 27,850 lb.
HD-20	175 net engine hp.; 41,000 lb. Hydraulic Torque Converter Drive

ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.





The type H Traylor Jaw Crusher is just one of 33 sizes available to meet your needs. Write for Bulletin 4105.

way back . . .

in the 19th century . . . stone production was mainly a "pick and shovel" job. Even then, operators were concerned over the problem of increased production . . . were gingerly testing early types of crushers.

TRAYLOR HAS GROWN up with the stone production industry. We have seen it develop from back breaking work to a state of high efficiency and high production. Amazing progress has been made in the development of machinery to speed production and cut costs. For 50 years, we have been applying Traylor skill and knowledge to constantly supply still better equipment to the industry that has been our valued customer. As we begin our second half-century, you can continue to count on Traylor for the latest and best stone crushing machinery.

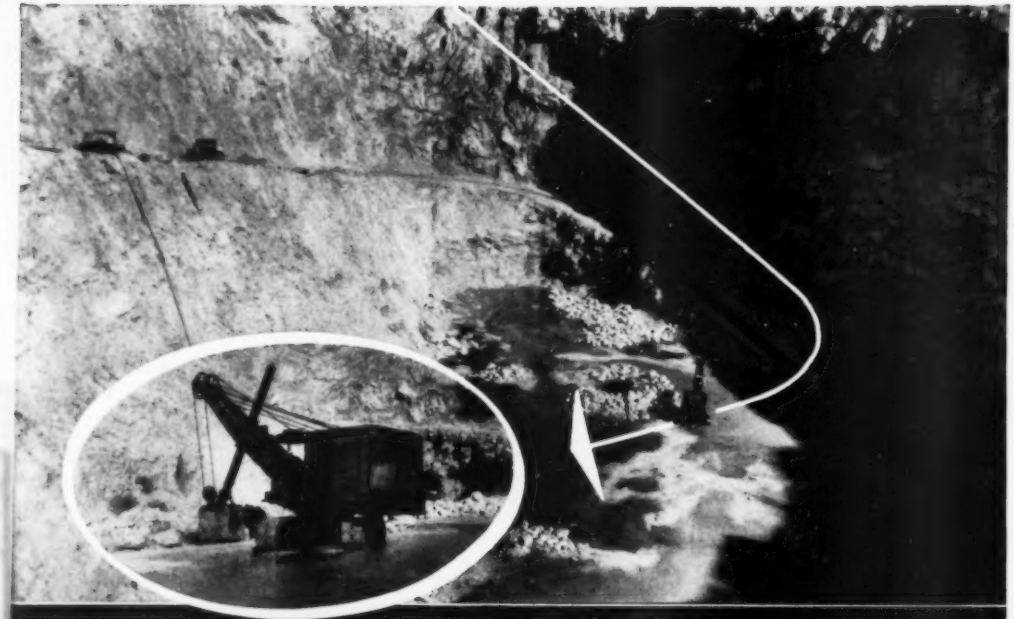
Traylor

ENGINEERING & MANUFACTURING CO.

456 MILL ST., ALLENTOWN, PA.

Sales Offices: New York • Chicago • Los Angeles
Canadian Mfrs: Canadian Vickers, Ltd., Montreal, P. Q.

A TRAYLOR LEADS TO GREATER PROFITS



LOOK AT THIS LORAIN AFTER MOVING 2½ MILLION YARDS OF ROCK!

LOOK ***at this record!*** After more than 12 years and 2½ million yards of hard digging, this 1½-yard Lorain-79 shovel *is still at work* for R. A. Wade & Co., Bessemer, Alabama.

LOOK ***at that quarry!*** It's 200 ft. deep and millions of yards of tough dolomite limestone have been dug from it by this Lorain to feed blast furnaces in Birmingham. Surely, here's a job that calls for the best in shovels.

LOOK ***at the Lorain!*** It's still digging rock—still in good working condition. In 1939, as well as now, Lorains were built to break records in rock—proof of Lorain quality, stamina and endurance in the toughest kind of digging.

LOOK ***at the results!*** Imagine the earning power of this veteran Lorain . . . the profits it has paid . . . the satisfaction it has given its owner. These are reasons why R. A. Wade & Co. have 3 Lorains—why they bought the new Lorain-50 shown at the right!

• *Ask your Thew-Lorain Distributor for more proof of Lorain performance records!*

THE THEW SHOVEL CO., LORAIN, OHIO

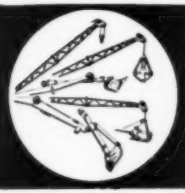
NOW **LOOK AT THE NEW 50**

This is Wade's newest Lorain.

They've just opened a new quarry and Lorain again is the choice. This time it is a 1-yd. Lorain-50. Equipped with shock-absorbing hydraulic (fluid drive) coupling, air assist on crowd, retract and hoist controls—air steer and tread lock—plus many other new and modern features—the Lorain-50—today's newest Lorain—is built to surpass even the amazing records of previous Lorain models—some still on the job after a quarter of a century or more!

THEW **LORAIN**®

on CRAWLER or RUBBER



SHOVELS
CRANES
DRAGLINES
CLAMSHELLS
HOES

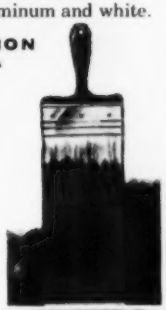
Cut your maintenance costs on every rustable metal surface indoors and out with this practical, sensible coating!

STOP RUST! with RUST-OLEUM

Day in and day out, your equipment and metal structures face the *toughest rust-producing conditions*—dust, fumes, rain, moisture, heat and general weathering! To *stop rust* and protect your metal surfaces you need RUST-OLEUM!

RUST-OLEUM may be applied directly over surfaces *already rusted* without removing all the rust. Just wirebrush and scrape with sharp scrapers to remove rust scale and loose particles . . . then apply by brush, dip, or spray. Costly sandblasting and chemical pre-cleaning are not usually required. This means that one man often does the work of two with RUST-OLEUM! Practical, too . . . because RUST-OLEUM *beautifies as it protects* in all colors, aluminum and white.

RUST-OLEUM CORPORATION
2717 Oakton Street • Evanston, Illinois



May be applied directly over rusted surfaces without removing all the rust!
Available in All Colors, Aluminum and White

PROTECT CONVEYORS • PIPES • BUILDINGS • EQUIPMENT • TANKS
STACKS • METAL SASH • GIRDERS • STAIRWAYS • CRUSHERS • DUSTERS

CLIP THIS TO YOUR LETTERHEAD
MAIL TO: RUST-OLEUM CORPORATION
2717 Oakton Street • Evanston, Illinois

- ☐ Have a Qualified Representative Call
- ☐ Full Details on Free Survey
- ☐ Complete Literature
- ☐ Nearest RUST-OLEUM Source

Marion 10-yd. Rock Body, equipped with twin telescopic, double-acting hoist, for off-the-road operation.

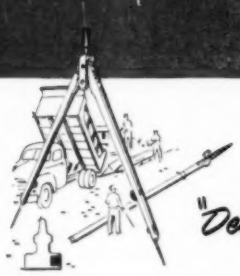
A New Approach To Special Haulage Problems

● Marion offers a new approach to your haulage problems . . . an experienced approach that is coupled with engineering and manufacturing ability to design and produce whatever body and hoist equipment is needed for your particular operation.

Marion produces many standard models, too —we feel they are the finest on the market. But if your transporation needs call for something a little different, or even radically different, Marion can design and build it for you . . . quickly and economically.

To those who want experienced, imaginative assistance in the review of their haulage procedures, Marion offers a service which is unmatched in the industry today.

Your inquiries are welcome.



"Designed on the Job"

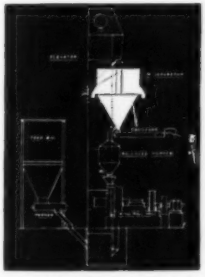
MARION
BODIES AND HOISTS

METAL PRODUCTS CO.
Marion, Ohio, U. S. A.

Manufacturing a complete line of standard and special hydraulic hoists and dump bodies.

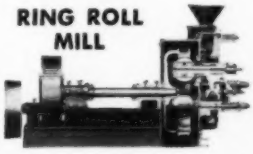
STURTEVANT AIR SEPARATORS

Produce Aggregates that meet Government Specifications



Sturtevant Air Separator in "closed circuit" with pulverizer. This combination increases tonnage and reduces costs in all types of industry.

RING ROLL MILL



Range 10 to 200 mesh. Use this mill in closed circuit with Sturtevant Air Separators.

On dam projects throughout the country, Sturtevant Air Separators are helping contractors meet U. S. Corps of Engineers specifications for proper analysis of aggregates. Here's how — Sturtevant Air Separators de-dust and remove the fine fraction according to the mesh required. Dry or damp sand can be handled in any tonnage desired in ranges from 30 mesh and finer to eliminate screen in the production of intermediate sizes.

The de-dusted sand of proper mesh is then inter-blended with the screened sand or aggregates in the proper proportions providing aggregates that meet specifications.

Sturtevant Air Separators are fast and accurate. They increase production of aggregates, cut production costs.

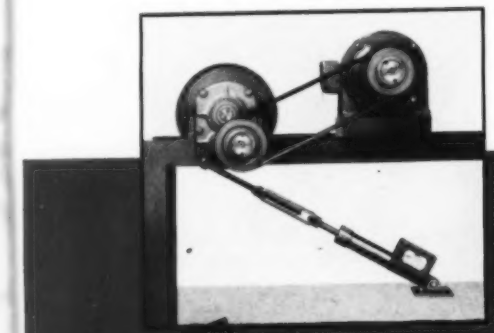
Investigate Sturtevant Air Separators for your jobs. Write for details, today.

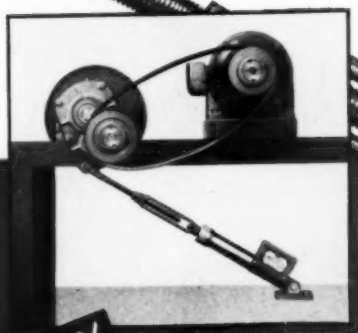
STURTEVANT MILL COMPANY

104 CLAYTON STREET, BOSTON 22, MASSACHUSETTS

Designers and Manufacturers of: CRUSHERS • GRINDERS • SEPARATORS • CONVEYORS MECHANICAL DRYS and EXCAVATORS • ELEVATORS • MIXERS

NEW!





Now . . . another great development by Dodge . . . that provides instant and positive protection for driven machines, motors, and the famous Torque-Arm Speed Reducer itself! The new Dodge Tri-Matic Overload Release prevents breakdowns, avoids expensive repairs, insures your production against costly interruptions.

Here's a worthy companion to other Dodge achievements in power transmission machinery, such as Taper-Lock Sheaves, Dodge-Timken Bearings, Rolling Grip and Diamond D Friction Clutches, Dodge Torque-Arm Speed Reducers, which have brought dependable speed reduction to industry's machines at great savings in cost, are available in two series—Single Reduction and Double Reduction—with capacities from 1 hp to 43 hp, speeds from 12 to 330 rpm.

Write for special data on Torque-Arm Speed Reducers and the new Tri-Matic Overload Release.

CALL THE TRANSMISSIONEER your local Dodge Distributor. Factory trained by Dodge, he can give you valuable assistance on new construction materials. Look for his name under "Power Transmission Equipment" in classified phone book.

DODGE MANUFACTURING CORPORATION, 6000 Union St., Mishawaka, Ind.

DODGE

Tri-Matic Overload Release

FOR THE FAMOUS DODGE TORQUE-ARM SPEED REDUCER

1 LOOSENS THE BELTS

2 CUTS OFF POWER

3 GIVES A WARNING

Protects Your Machines

Mechanically . . Electrically

POSITIVELY!

- The Dodge Tri-Matic Overload Release is a simple, positive acting unit that replaces the standard torque arm that is regularly furnished with the Dodge Speed Reducer. (The two are interchangeable.)
- Pressure exerted by an excessive load causes a piston to move lengthwise through the unit, activating the mechanism instantly.
- This movement shortens the torque arm, loosens the belts and cuts off current simultaneously.
- A warning system can be hooked up to the micro switch of the Tri-Matic—to activate bell, siren or light.
- The Tri-Matic is calibrated for adjustment to the load conditions of any job. It can be set to act at any desired load up to the reducer's maximum capacity.
- It is easy to reset the Tri-Matic. Just pull the speed reducer back into position. This automatically cocks the release mechanism.
- The Dodge Tri-Matic Overload Release is available from distributors' stocks in sizes for all Dodge Torque-Arm Speed Reducers —in either single or double reduction series.

DODGE

of Mishawaka, Ind.

*Overcured Sections — present every 30′ to 40′ in all belts made by the flat press method. Only Rotocuring (continuous, non-stop curing) eliminates this major cause of belt failures.

Here Lies a Good Conveyor Belt ...killed by OCS*

—BWH ROTOCURE prevents these fatalities — look for it in the belts you buy

Press overlaps, inherent in belts cured by flat press methods, are a primary cause of early belt failure. The overlaps result in overcured segments 2″ to 4″ wide across the entire belt because vulcanization is *not* continuous. These 2″ to 4″ segments are *double cured* — and *double curing weakens the structure!*

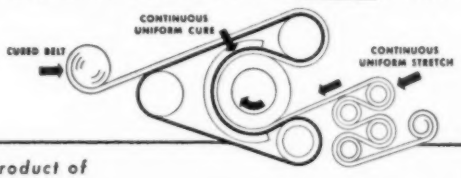
When you buy a BWH conveyor belt made by the *continuous* ROTOCURE process of vulcanization you obtain a *uniformly strong* belt *overall.* The weakened segments due to overlapping that sabotage operations and inflate belting costs are completely eliminated. With continuous, endless vulcanization you'll be ahead four ways:

1. In increased belt flex life — as much as 40%
2. In elimination of mechanical distortion at the press ends
3. In constant, uniform stretch
4. In uniform, abrasion-resistant covers

These characteristics of BWH Conveyor Belts mean minimum belt maintenance costs, longer belt life and appreciable per ton savings in the cost of what you convey! Ask your BWH distributor to show you how these highly serviceable belts can help you. Or write us direct.**

**Ask him also about BWH Rotocured Transmission Belts. Because they permit operation at lower tensions, you are assured of longest possible belt life.

DIAGRAMMATIC SKETCH OF EXCLUSIVE ROTOCURE PROCESS



BWH
DEPENDABLE RUGGEDNESS

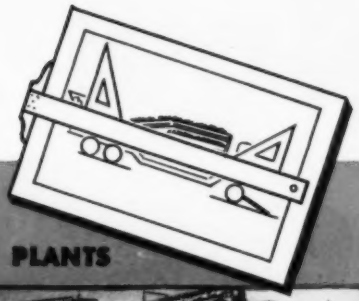
Another Quality Product of

BOSTON WOVEN HOSE & RUBBER COMPANY

Distributors in all Principal Cities

PLANT: CAMBRIDGE, MASS. • P.O. BOX 1071, BOSTON 3, MASS., U. S. A.
WAREHOUSE STOCK, 111 NORTH CANAL ST., CHICAGO, ILLINOIS

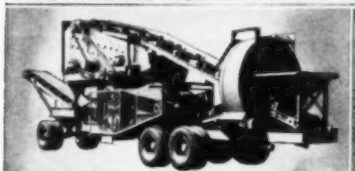
FOR THE *RIGHT* COMBINATIONS



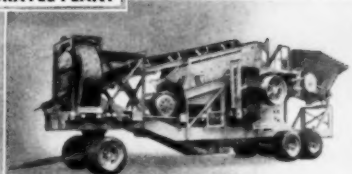
MEET YOUR AGGREGATE REQUIREMENTS WITH **UNIVERSAL** PORTABLE PLANTS

293Q TWINDUAL PACEMAKER ROCK & GRAVEL PLANT

880 GRAVELMASTER

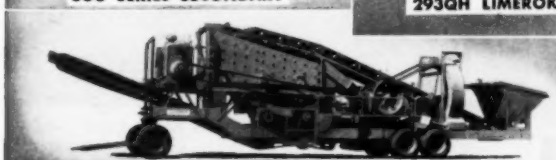


800 SERIES SECONDARY



293QH LIMEROK

CSE TRAVELER GRAVEL PLANT



TDM-24 TWINDUAL MASTER GRAVEL PLANT

PORTABLE CONVEYOR

PORTABLE WASHING PLANT

GA CRUSHING UNIT

546P PRIMARY

There is always one right combination for every crushing job... one that will do your job better and faster. Select the right equipment from the complete line of Universal portable plants... the most complete line of rock, gravel and aglime crushing, screening, loading and washing equipment available.

You get balanced production, high capacity, low cost operation, minimum maintenance with field-proven Universal portable plants... Whether your job requirements are big, medium, or small, Universal builds the plant you need for most profitable operation. Ask your Universal distributor or write for illustrated literature.

UNIVERSAL ENGINEERING CORPORATION Division of PETTIBONE MULLIKEN CORPORATION

619 C Avenue N.W., Cedar Rapids, Iowa
Phone 7105

4700 West Division St., Chicago 51, Illinois
Phone Spaulding 2-9300

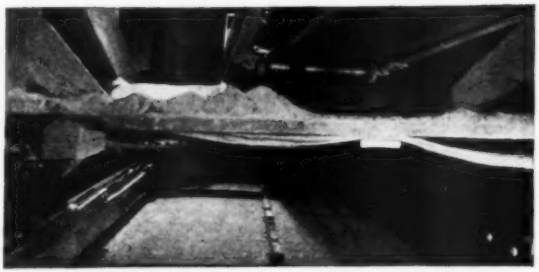
NOW... SCREEN FINE, MOIST MATERIALS Without Blinding!

ALLIS-CHALMERS THERMO-DECK Heating Unit

NO "TIME OUT" to clear fine or medium mesh screen cloth! You can screen fine, moist non-combustible materials *continuously* with new *Thermo-Deck* heating unit.

INCREASED CAPACITY! Heated screen cloth *remains* open, permitting more tonnage through the screen and better separation.

LOWER COSTS! Operating records show that heated screen cloth lasts up to three times as long when cloth does not have to be pounded free of blinding material. The *Thermo-Deck* heating unit can be easily applied in the field. Your nearby A-C representative can give you more details: Allis-Chalmers, Milwaukee 1, Wisconsin. A-3602



POWER ON — *Thermo-Deck* heating unit keeps screen cloth clear on screen handling pulverized limestone.

POWER OFF — Troublesome blinding results on same screen when *Thermo-Deck* heating unit is turned off.

Send for...

New 8-page bulletin containing complete facts on operation and application of the *Thermo-Deck* heating unit.

Bulletin 07B7812

Thermo-Deck is an Allis-Chalmers trademark.

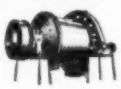
ALLIS-CHALMERS

Sales Offices in Principal Cities in the U. S. A. Distributors Throughout the World.

Pulverator

Jaw Crushers

Gyratory Crushers



Grinding Mills

Vibrating Screens

Kilns, Coolers, Dryers

Savings for you— All down the Air Line

START YOUR SAVINGS WITH A GARDNER-DENVER WATER-COOLED PORTABLE

You can bank on a Gardner-Denver Two-Stage, *fully* Water-Cooled Portable Compressor for low-cost compressed air that's always available at full capacity — regardless of temperature, weather or altitude.

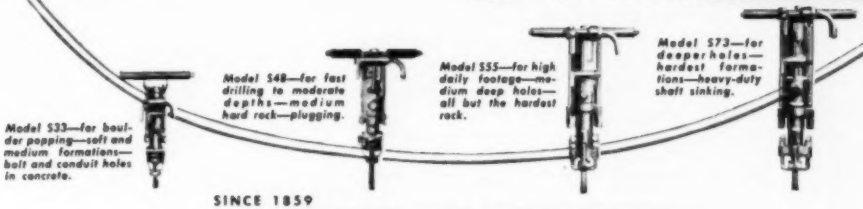
ADD AN LO12 AUTOMATIC LINE OILER

Saves shop time and repair costs for any pneumatic tool, because it's designed to stop the flow of air when it runs out of oil. Protects your drills and tools against "dry run" damage.

TOTAL UP THE EXTRA FOOTAGE DRILLED WITH GARDNER-DENVER SINKERS

Pick the size that's correct for deep or shallow holes — in any type of ground — and watch your drillers turn in more footage every shift. Powerful rotation — excellent hole cleaning ability — easy holding characteristics.

Write us today for further information on saving with Gardner-Denver Portables, Line Oilers and Sinkers.



Model S33—for boulder popping—soft and medium formations—bolt and conduit holes in concrete.

Model S4B—for fast drilling to moderate depths—medium hard rock—plugging.

Model S55—for high daily footage—medium deep holes—all but the hardest rock.

Model S73—for deeper holes—hardest formations—heavy-duty shaft sinking.

SINCE 1859

GARDNER-DENVER

Gardner-Denver Company, Quincy, Illinois

In Canada: Gardner-Denver Company (Canada), Ltd., Toronto, Ontario

THE QUALITY LEADER IN COMPRESSORS, PUMPS AND ROCK DRILLS

SHORT CUT TO MORE

OF CLEAN CUBICAL

SINGLE 3240 IMPACT MASTER IN CLOSED CIRCUIT SETUP GIVES DILLON STONE COMPANY PROFIT-MAKING CAPACITY

Under normal operations, the Dillon Stone Company, Columbus Junction, Iowa, feed their closed circuit IMPACT MASTER setup with a ¾ yard shovel and 3 quarry trucks to turn out an average of 110 — 120 tph to meet market demands. Their product is approximately 28 percent minus 1¼" plus ¾", 38 percent minus ¾" plus #4 mesh, and 34 percent agricultural limestone.

ADDS SHOVEL... DOUBLES OUTPUT

During their peak operating period last summer, they added another ¾ yard shovel, increased their quarry trucks to 6, and stepped up production to over 200 tph of minus 1¼"... at times reaching a peak of 240 tph. No other additions were made on the plant. The single 3240 IMPACT MASTER does the complete crushing job with 135 hp.

WRITE FOR LITERATURE

More production with minimum plant investment is just one of the profit-making features of the PMCO IMPACT MASTER. Get proof of performance for yourself. Find out how "Controlled Impact Action" works to give you a better quality uniform gradation cubical aggregate, how it gives you greater control over finished product size with simple mechanical adjustments changing the percentage of sizes when desired. PMCO IMPACT MASTERS are available with capacities to 500 tph. Write today for details.

PETTIBONE MULLIKEN CORPORATION

4700 West Division St., Chicago 51, Illinois Phone Spaulding 2-9300

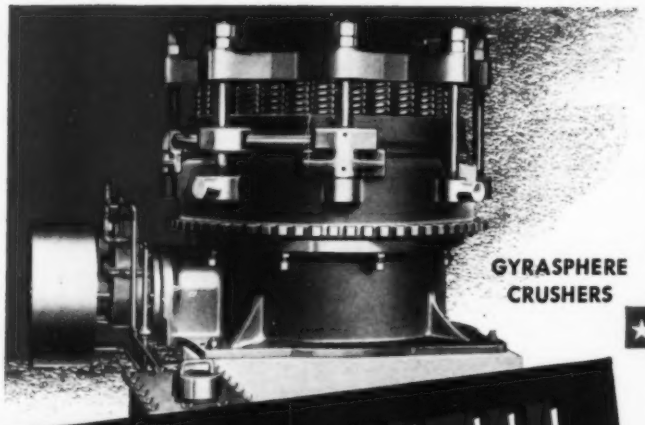
PRODUCTION

AGGREGATE

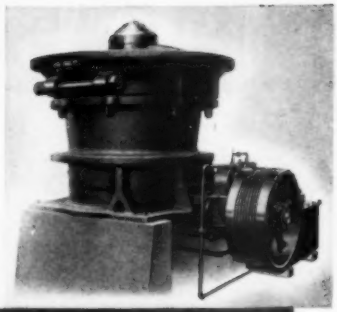
CONTROLLED IMPACT ACTION

Dillon Stone Company's closed circuit setup with 3240 IMPACT MASTER, 36″ x 12′ apron feeder, 5′ x 14′ 3-deck screen, 30″ x 16′ breaker conveyor, 24″ x 100′ main plant conveyor, 18″ x 62′ return conveyor, 23 yard bins, and portable stockpiling conveyor. To the right, a close-up view of the single 3240 IMPACT MASTER which does the complete crushing job.

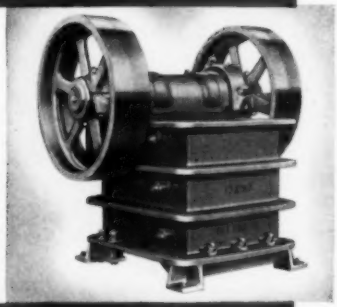
GET PROFIT-WISE GO PMCO



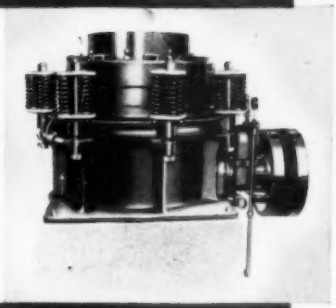
GYRASPHERE CRUSHERS



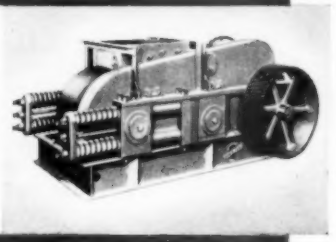
★ GYRATORY BREAKERS



★ JAW CRUSHERS



★ INTERCONE CRUSHERS



★ DOUBLE ROLL CRUSHERS

TELSMITH CRUSHERS

for

BETTER PRODUCT • BIGGER CAPACITY LOWER COST

What do you want to crush? What size product do you want to make? Coarse . . . intermediate . . . fine . . . or a wide range of sizes? Telsmith Crushers can do it for you—most ***dependably***. You can be sure that Telsmiths will be right for your particular job ***always***. Because Telsmith builds crushers of ***all types***. And Telsmith Engineers have no reason whatever to be prejudiced for or against any one type of crusher. Consult Telsmith Engineers . . . get their unbiased recommendations for your plant. Find out how the latest features in modern crusher design give you top tonnage, exceptional product quality, low cost . . . get Crusher Guide No. 271, and Bulletins 270 and 274. C-7

TELSMITH

PRIMARY CRUSHERS

Jaw Crushers: Sizes 10 x 16 in. to 30 x 42 in., 22 to 240 tons per hr. capacity.
Gyratory Breakers: Sizes 6-B to 25-B, 26 to 400 tons per hr.

SECONDARY CRUSHERS

Gyrasphere: Sizes 24 to 48 in., 15 to 210 tons per hr. ***Intercone:*** Sizes 18 to 28 in., 26 to 68 tons per hr. ***Double Roll:*** Sizes 24 x 16 in. to 36 x 22 in., 75 to 132 tons per hr.

SMITH ENGINEERING WORKS, 504 E. CAPITOL DRIVE, MILWAUKEE 12, WISCONSIN

Cable Address: Smgworks, Milwaukee

51 East 42nd St., New York 17, N.Y. · 211 W. Wacker Drive, Chicago 6, Ill. · 713 Commercial Trust Bldg., Philadelphia 2, Pa. · 230 Main Street, Cambridge 42, Mass. · Beebe Equipment Co., Milwaukee 2, Wis. · A. N. Wight, 204-6 N. Roosevelt Ct., Columbus 3, Ohio

Clyde Equipment Co., Portland 9, Ore., & Seattle 4, Wash. • Minan Eng. & Equip. Co., San Francisco 4, Calif. • Interstate Equipment Co., Statesville, N. C. • Blair Equip. Co., Charleston 22, & Clarksburg, W. Va.—Roanoke 7, & Richmond 36, Va. • Wilson-Wesener-Wilkinson Co., Knoxville 8, & Nashville 6, Tenn.

One too many

Short supply is a happy state of affairs when a woman buys a hat.

In industry, too often it is a sword that hangs over the buyer's head. Executives who order more than 85 per cent of all Multiwall bags overwhelmingly specify* on-schedule delivery as the factor to which they give greatest weight.

Union Multiwalls are shipped from the world's largest pulp-to-container mill.

The pulp from which they are made comes from forests Union owns or manages. Your supply of Union Multiwalls is unlikely ever to be restricted because of raw material shortages.

When and if allocations are necessary, you can count on receiving your fair share.

These are among the reasons why, since World War II, major buyers have given dependable Union so proportionately great an increase in their Multiwall orders.

More so every day . . .

IT'S UNION FOR MULTIWALLS

TRADE MARK UNION

*August, 1951 research study.

UNION BAG & PAPER CORPORATION • NEW YORK: WOOLWORTH BUILDING • CHICAGO: DAILY NEWS BUILDING

"QUICK-WAY"

Reg. U.S. Pat. Off.

Speeds Output Increases Profits for PIT AND QUARRY OPERATORS

Whether its moving shot rock, sand, or crushed stone, stripping overburden or charging bins, you'll find the "QUICK-WAY" in a class by itself in the ¼ to ½ yard field.

The "QUICK-WAY" features low center of gravity, works easily over the side, has proper balance for truck operation, gives you easy, fast swinging, plenty of reserve power, rugged all steel construction, numerous parts interchangeable. 4 models, ¼ to ½ cubic yard shovel, clamshell, dragline, backhoe, 3 to 10 ton crane capacity. Truck speeds to and from jobs. Low initial cost. Low maintenance costs. Eight different attachments.

With a "QUICK-WAY" you'll roll up yardage records hour after hour, day after day. Ask your distributor for a free demonstration or mail coupon.

"QUICK-WAY" Model E dragline with 30' boom loading gravel

"QUICK-WAY" truck shovel, loading sand

"QUICK-WAY" crane with skull cracker attachment eliminates secondary shooting

Clinker is handled from the pit to the storage pile and from the storage pile to grinding circuit with a mobile "QUICK-WAY" crane

"QUICK-WAY"
TRUCK SHOVEL CO.
Denver, Colorado, U.S.A.

MAIL COUPON TODAY

"QUICK-WAY" TRUCK SHOVEL CO.
Dept. 54 • 2401 East 40th Ave. • Denver 1, Colorado

Please send me complete details on "QUICK-WAY" Truck Shovels —four different models from 3 to 10 ton crane capacity.

Name _____

Address _____

City _____ *State* _____

HUDSON
MULTI-WALL SACKS

PASTED AND SEWN—VALVE AND OPEN MOUTH

MEASURE UP TO YOUR MOST EXACTING SPECIFICATIONS

Hudson is able to deliver multi-wall sacks that live up to the letter of your specifications... *every time*. Here are the reasons:

1 Hudson has control over all the basic ingredients. Every step in manufacture—from the timber reserves to the finished sack—is under one ownership and management.

2 The Hudson mill is new. Here the most modern equipment that can be built turns out your sacks under regulated temperature and humidity. Electronic controls give a new meaning to the word "exact."

3 Tests, inspections, and double checks follow your sacks through the mill, with a relentless vigil.

4 Hudson is a veteran of 30 years of experience in the kraft field. The company understands your problems in packaging and knows why your specifications are *important*.

Order from Hudson, and be sure of sacks *when* you want them —the *way* you want them!

This young lady is making one of a series of detailed inspections that follow your multi-wall sack through the Hudson mill. It is just one of the assurances that every sack shipped to you is up to specifications.

Send today for informative literature on Hudson Multi-Wall Sacks. Just drop us a note.

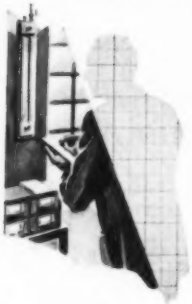
a completely integrated mill

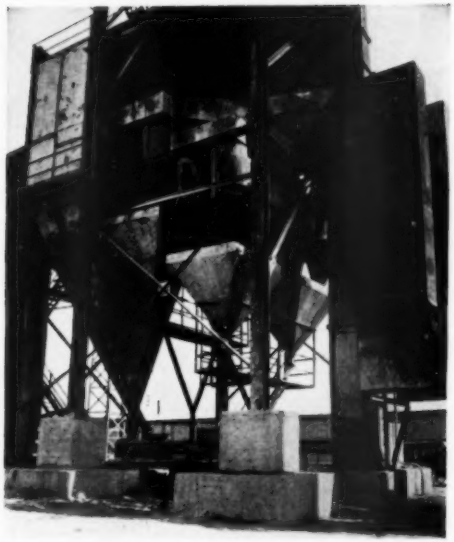
HUDSON PULP AND PAPER CORPORATION

Dept. 102, 305 Park Avenue, New York 22, N.Y.

This 'dust' man can help you...

Solve Stack Dust Problems





Buell van Tongeren Cyclones with the exclusive "Shave-off" provide high efficiency in the collection of kiln dust.

Let him show you how to assure peak efficiency in Dust Recovery

The Buell organization of industrial 'dust' men is devoted solely to the design and construction of dust collection and dust recovery equipment that will most efficiently and economically solve your plant's specific Stack Dust problem.

For more than 18 years we have been doing just this for all American industry. Every Buell installation is a custom-designed system, engineered to hold stack dust discharge down to the practical limits which assure new profits, improved product and/or process, better plant-community relations, higher levels of employee morale.

For full information about Buell's ***3 basic systems*** of dust collection, and how one can be applied to the solution of your stack dust problems, write today. Ask for the new, informative bulletin titled, "The Collection and Recovery of Industrial Dusts." Do it now. Buell Engineering Co., Dept. 18-C, 70 Pine Street, New York 5, N. Y.

ELECTRIC CYCLONIC

buell

HIGH EFFICIENCY CYCLONES • ELECTRIC PRECIPITATORS
TYPE 'LR' COLLECTORS • LOW DRAFT LOSS COLLECTORS
SPECIAL PURPOSE COLLECTORS • DUST HOPPER VALVES

ENGINEERED EFFICIENCY IN ***DUST COLLECTION***

What do his figures tell him about this rope ?

Since the day it was installed, he's kept a brief record of this wire rope's performance. The black book tells him the date it went to work, the type of work it's doing, and roughly just how much it does each day. When the rope is retired from service, he'll be able to say whether it's done a good job for him—given him his money's worth.

Smart man! For of course he isn't keeping tabs on just this one rope. He follows the system with all the major wire ropes he buys. And why? Because he learned years ago that you can't compare brands of rope by guessing—by vague, hit-or-miss estimates.

Bethlehem earnestly recommends that you, too, keep figures on rope performance. Nothing elaborate—something that costs you only a few minutes' time each day. You see, we're so confident of our own product, Bethlehem wire rope, that we'd like to have you check it yourself. Stack it against the competitive brands of your choice. Keep records on all of them!

When you've been doing it long enough to make a comparison, study those figures. They'll tell you that every dollar invested in Bethlehem rope is money well spent . . . that you can't buy finer rope anywhere.

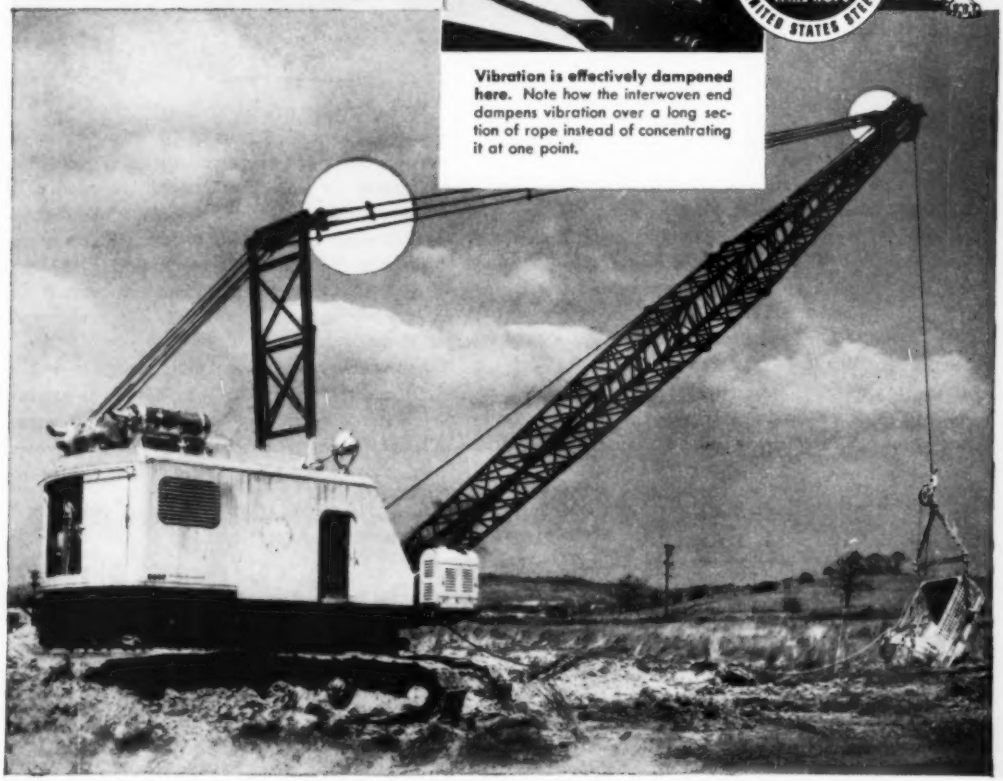
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

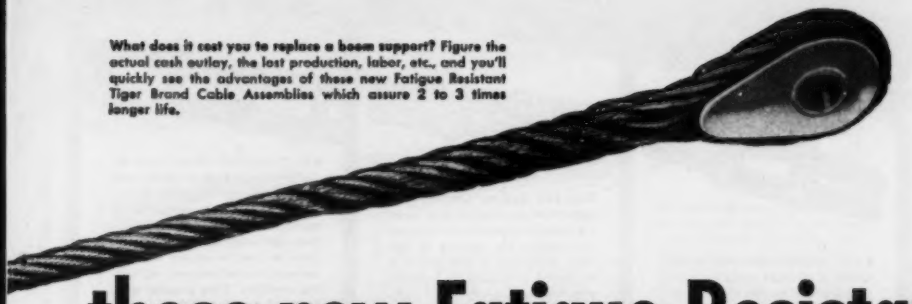
LET YOUR RECORDS TELL YOU!

Your boom support costs can be cut in half with

Vibration is effectively dampened here. Note how the interwoven end dampens vibration over a long section of rope instead of concentrating it at one point.



What does it cost you to replace a boom support? Figure the actual cash outlay, the lost production, labor, etc., and you'll quickly see the advantages of these new Fatigue Resistant Tiger Brand Cable Assemblies which assure 2 to 3 times longer life.



these new Fatigue Resistant TIGER BRAND Cable Assemblies

***An exclusive development of* AMERICAN STEEL & WIRE DIVISION**

Why these boom supports last 2 to 3 times longer. Excessive vibration is the chief cause of boom support failure. In old style boom supports, vibration is concentrated at the *point* where the rope enters the socket. This causes the wires to break from fatigue. In this new assembly, the effects of vibration are dissipated over a long section instead of being concentrated at one point. The result is two to three times longer life for boom supports and much greater safety.

The new Tiger Brand Assembly has a novel design which embodies *interwoven* eye-end and open-end thimbles which makes these pendants easily and quickly interchangeable on standard equipment.

You also save replacement time. If the machine is down for two or three hours while new boom supports are being installed, you lose that much production time. Longer life from our new supports *results* in fewer replacements. This means clear profit if you use the new Tiger Brand Supports.

Order your next boom supports now. The new Fatigue Resistant Boom Supports can be easily and quickly adapted to your present equipment because essential dimensions such as pin diameters, distances between ears, etc. are the same as for standard open and closed sockets. Send the coupon for complete information.

AMERICAN STEEL & WIRE DIVISION
UNITED STATES STEEL COMPANY
GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

American Steel & Wire Division
Rockefeller Building, Dept. H-32
Cleveland 13, Ohio

Please send me complete information on your new Tiger Brand Boom Support Assemblies.

Name.....

Title.....

Company.....

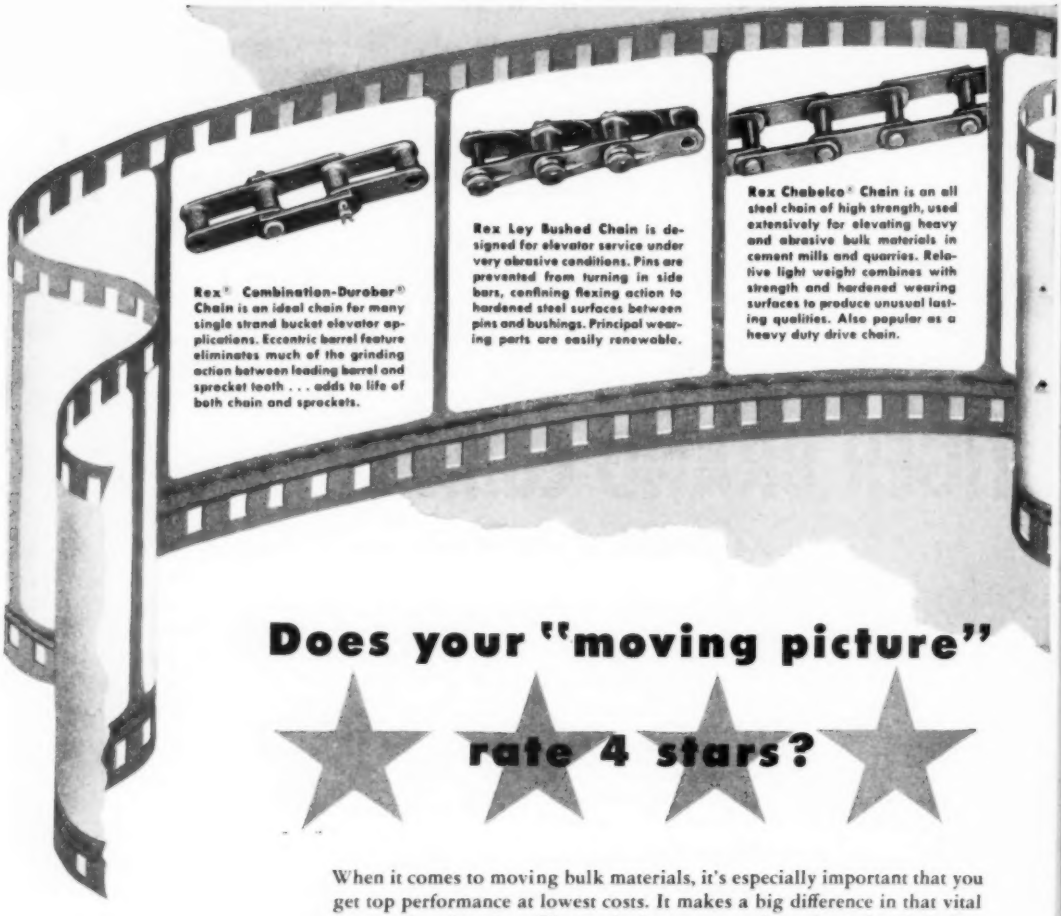
Address.....

City.....State.....

U·S·S AMERICAN TIGER BRAND WIRE ROPE

Excellay Preformed

UNITED STATES STEEL



Rex® Combination-Durobar® Chain is an ideal chain for many single strand bucket elevator applications. Eccentric barrel feature eliminates much of the grinding action between loading barrel and sprocket tooth . . . adds to life of both chain and sprockets.

Rex Ley Bushed Chain is designed for elevator service under very abrasive conditions. Pins are prevented from turning in side bars, confining flexing action to hardened steel surfaces between pins and bushings. Principal wearing parts are easily renewable.

Rex Chabelco® Chain is an all steel chain of high strength, used extensively for elevating heavy and abrasive bulk materials in cement mills and quarries. Relative light weight combines with strength and hardened wearing surfaces to produce unusual lasting qualities. Also popular as a heavy duty drive chain.

Does your "moving picture" rate 4 stars?

When it comes to moving bulk materials, it's especially important that you get top performance at lowest costs. It makes a big difference in that vital matter of profit or loss. That's why it pays you to investigate the Chain Belt line of materials handling equipment.

Whether your "moving picture" calls for chains and sprockets, belt conveyors, complete bucket elevators, feeders, or apron and pan conveyors, you'll find in the complete Chain Belt line the exact equipment that best fits your requirements for low-cost materials handling.

Rex Engineers are well qualified by years of experience to help you with your design, selection and replacement problems. They are backed by equipment which has been recognized as "tops" in quality for over 60 years. Call your nearest branch office today or write for our new 44 page booklet on Rex Equipment for the Cement and Rock Products Industries. Chain Belt Company, 4604 W. Greenfield Ave., Milwaukee 1, Wis.

CHAIN BELT REX COMPANY

Chain

ATLANTA • BALTIMORE • BIRMINGHAM • BOSTON
BUFFALO • CHICAGO • CINCINNATI • CLEVELAND • DALLAS
DENVER • DETROIT • EL PASO • HOUSTON
INDIANAPOLIS • JACKSONVILLE • KANSAS CITY
LOS ANGELES • LOUISVILLE
Distributors in principal cities

Rex Heavy Duty Drag Chain has links of massive construction proportioned for strength and wear. Wide-faced barrel acts as a scraper. Used extensively for handling both hot and cold clinker.

Baldwin-Rex® Roller Chain is a high strength, precision-built, finished steel chain widely used in drive applications. Especially suitable where high speeds are encountered. Available in a complete line from ¼" to 2½" pitch.

Rex Belt Idlers are the backbone of all types of belt conveyors. Triple labyrinth grease seal assures longer life and low maintenance costs . . . guards against costly "freeze-ups." Available in a wide range of designs and sizes to suit every application.

Rex Standard Bucket Elevators are made in 3 basic designs . . . Centrifugal Discharge type, Continuous Bucket type and Super Capacity type. All major component parts are made by Chain Belt Company. Specials can be manufactured to order to fit unusual applications.

Rex Temperim® Sprockets have specially hardened rims with extremely uniform tooth contours. They will not wear rapidly even under severely abrasive conditions. Thus, they help to maintain chain pitch and prolong chain life.

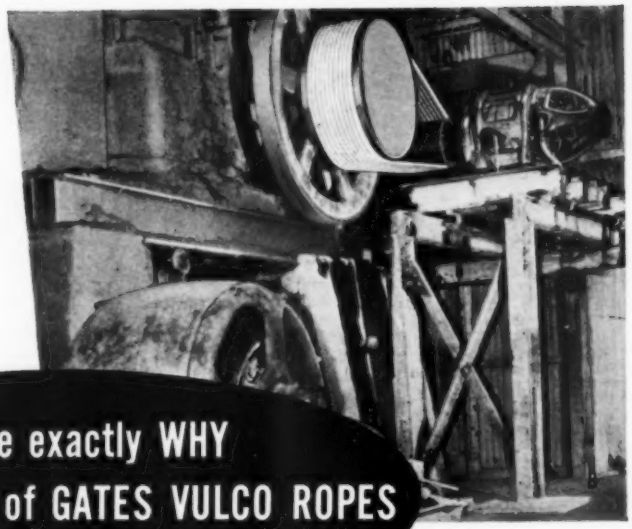
Rex Apron and Pan Conveyors are ruggedly built for heavy-duty handling of loose bulk materials. Available in a wide variety of styles to meet requirements of the material being handled. Often used for handling extremely hot material. Square through-rod construction adds to long life.

Rex Elevator Buckets are made of either malleable iron or Rex Z-Metal, carefully molded to assure uniform thickness. Corners are well rounded to assure free delivery of materials. Available in a variety of styles, depending on type of material being handled (Style AA shown).

Belt COMPANY
OF MILWAUKEE

MIDLAND, TEXAS • MILWAUKEE
MINNEAPOLIS • NEW YORK • PHILADELPHIA • PITTSBURGH
PORTLAND, OREGON • SPRINGFIELD, MASS.
ST. LOUIS • SALT LAKE CITY • SAN FRANCISCO
SEATTLE • TULSA • WORCESTER
in the United States and abroad

A large jaw crusher at the mill of a big copper mine in Sonora, Mexico, is driven by Gates Vulco Ropes. Picture shows the discarded motor still in foreground.



Let's see exactly WHY the Concave Sides of GATES VULCO ROPES mean lower V-Belt Costs!

Every engineer knows how a V-belt *changes shape* when it bends around a pulley.

The top of the belt is under tension—making it grow *narrower.*

The body is under *compression,* causing the sides to bulge out!

Look at figure 1-A in the diagrams, herewith. There you see how a *straight sided* V-belt is forced to bulge in its sheave-groove—and this bulging naturally causes extra wear along the middle of the sides as indicated by the arrows.

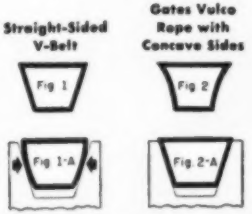
Now look at the figure 2-A. There you see how the precisely engineered Concave Sides fill out to an exact fit in the sheave groove.

Clearly, the Concave Sides press *evenly* against the V-pulley. This means uniform wear; longer life! The Concave Sides have *full traction;* wear longer because of *full contact!*

To sum up: The Concave Sides of Gates Vulco Ropes (U.S. Patent No. 1813698) give you (1) Less wear, (2) More pulley contact, (3) More sure power transmitted when needed!

Only V-belts made by Gates are built with concave sides. Whenever you buy V-Belts, be sure you get the V-Belt with the Concave Sides—The Gates Vulco Rope!

What Happens When a V-Belt Bends



How Straight-Sided V-Belt Bulges in Sheave-Groove. Sides Press Unevenly Against V-Pulley Causing Extra Wear At Point Shown by Arrows.

The Concave Sides Fill out to a Precise Fit in the Sheave Groove. No Side Bulge! Sides Press Evenly Against the V-Pulley—Uniform Wear—Longer Life!

CS-521

World's Largest Maker of V-Belts

Gates

Hose V-Belts Molded Rubber Goods for Industry

VULCO ROPE DRIVES

ENGINEERING OFFICES AND JOBBER STOCKS IN ALL INDUSTRIAL CENTERS

THE GATES RUBBER COMPANY • DENVER • U•S•A

2 Big Extra Values for you!

...in JOY SILVER STREAK ROCK DRILLS

(1) EXCLUSIVE! CADMIUM PLATING INSIDE and OUT

Cadmium plating prevents rusting of JOY Silver Streak Rock Drills and spare parts while in use or in storage. In addition, the plating forms cadmium oxide under frictional heat and pressure. This so effectively acts as a lubricant that the inner parts will not score, *even if regular lubrication is temporarily neglected!* In addition to assuring a smooth "run-in," cadmium plating allows closer tolerance of precision fitting parts—vital factors in the power and long life of the drill.

(2) EXCLUSIVE! JOY DUAL VALVE "Makes Air Do More Work"

The fast, powerful JOY Dual Valve action results in more and harder-hitting piston strokes per minute, for faster drilling with less air. The right amount of air is admitted behind the piston on the power stroke, and air is excluded ahead of the piston, to exert maximum force on the drill steel. Then the Dual Valve meters just enough air ahead of the piston to return it with a fast, snappy action for the next blow. The air actually does more work!

Consult a Joy Engineer

WAD C 4024

Over 100 Years of Engineering Leadership

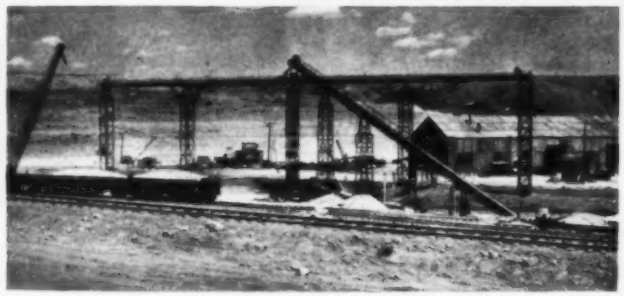
JOY MANUFACTURING COMPANY

GENERAL OFFICES: HENRY W. OLIVER BUILDING · PITTSBURGH 22, PA.

IN CANADA: JOY MANUFACTURING COMPANY (CANADA) LIMITED, GALT, ONTARIO

When economy is vitally important...

that Pioneer Edge



How Pioneer equipment did the job

Aggregate consisting of ¾" and 1½" quartzite arrived in bottom dump cars. It was stacked with a PIONEER reciprocating feeder loading a PIONEER 24" inclined belt conveyor equipped with a swiveled chute at its upper end. This either delivered material directly to a 50 foot rock ladder or to one of the two 115 foot 24-inch belts discharging to rock ladders serving the stockpiles. Capacity was 276 tons per hour.

Three gates under each stockpile delivered aggregate to an 18-inch belt which carried it by an underground-overground conveyor to the batch plant 835 feet away.

BUY BOTH!
HIGHER OUTPUT
LOWER UPKEEP

Pioneer

Continuflo EQUIPMENT

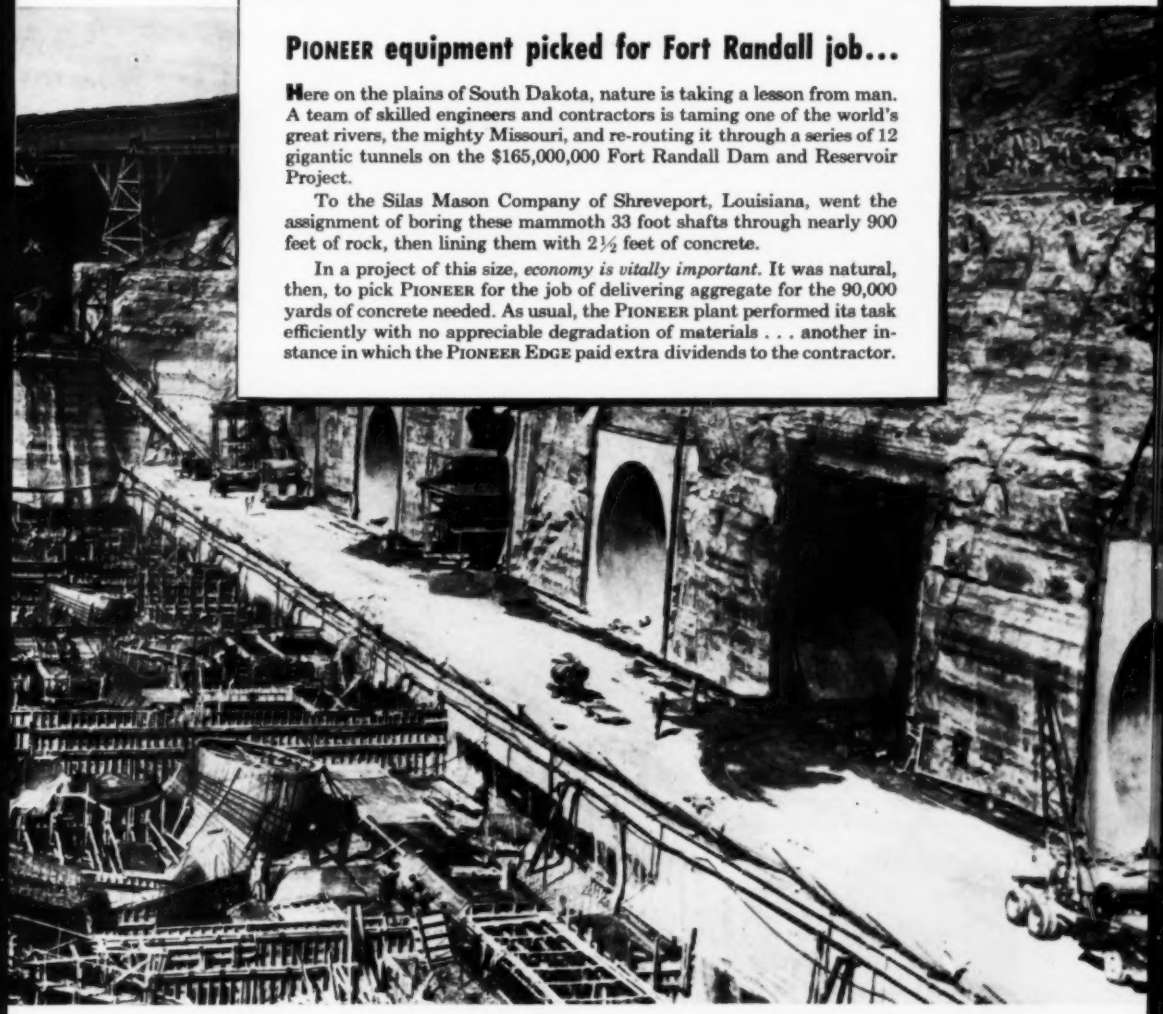
means rock bottom costs

PIONEER equipment picked for Fort Randall job...

Here on the plains of South Dakota, nature is taking a lesson from man. A team of skilled engineers and contractors is taming one of the world's great rivers, the mighty Missouri, and re-routing it through a series of 12 gigantic tunnels on the $165,000,000 Fort Randall Dam and Reservoir Project.

To the Silas Mason Company of Shreveport, Louisiana, went the assignment of boring these mammoth 33 foot shafts through nearly 900 feet of rock, then lining them with 2½ feet of concrete.

In a project of this size, *economy is vitally important.* It was natural, then, to pick PIONEER for the job of delivering aggregate for the 90,000 yards of concrete needed. As usual, the PIONEER plant performed its task efficiently with no appreciable degradation of materials . . . another instance in which the PIONEER EDGE paid extra dividends to the contractor.



What the Pioneer Edge *meant to Silas Mason*

At Fort Randall, PIONEER equipment again showed its exceptional capacity for efficient, low cost handling of sand and aggregate. Especially important was the fact that it eliminated breakage of materials and made it readily possible to adhere to strict government specifications.

"The system functioned economically and we were well satisfied with its performance," reports R. B. Jewell, Silas Mason's Resident Engineer in charge of the project.

PIONEER ENGINEERING WORKS
1515 Central Avenue • Minneapolis 13, Minnesota
SUBSIDIARY OF POOR & COMPANY, CHICAGO

● Please send me information on the equipment checked.

☐ CONTINUFLO CONVEYORS	☐ GRAVEL PLANTS	☐ WASHING PLANTS
☐ MECHANICAL FEEDERS	☐ ROCK PLANTS	☐ BITUMINOUS PLANTS
☐ VIBRATING SCREENS	☐ JAW CRUSHERS	☐ APRON FEEDERS
☐ BUZZER SCREENS (LIGHT DUTY)	☐ ROLL CRUSHERS	☐ ORO FEEDERS

*Name*_____

*Company*_____

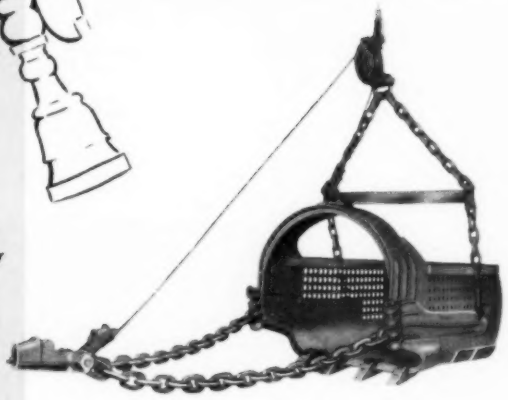
*Address*_____

*City*_____ *Zone* ____ *State*_____

"Your Best Move"

... IS A

Hendrix



3/8 TO 40
CUBIC YARDS

"Repeat orders" for Hendrix Dragline Buckets are real evidence of satisfaction. And their outstanding performance of delivering more pay dirt at lower cost has made them the first choice of progressive producers. Hendrix Buckets are engineered and designed to give years of low-cost high-profit operation with the minimum of maintenance. Repeat orders PROVE Hendrix Buckets are best . . . repeat orders are proof enough that YOUR BEST MOVE . . . IS A HENDRIX!

HENDRIX
Lightweight
DRAGLINE
BUCKETS

Hendrix Buckets Also Available Without Perforations On Special Order Only

HENDRIX MANUFACTURING CO., INC.

MANSFIELD – LOUISIANA

FOR TOUGH GOING

Even when the going gets tough—with rough ragged holes, rugged terrain, continuing rains, flooded pits — Primacord comes through with plenty of good digging. For there's a grade of Primacord to meet every blasting condition—*Reinforced* for very deep holes requiring high tensile strength; *Wire Countered* where there's high abrasion; *Plastic Reinforced* where water or acids are present.

The men like it, too. It comes in convenient spools; it's light in weight; easy to hook up for main and down-hole lines — just tie a half hitch — and it's safe to handle.

Primacord is not affected by stray currents nor can it be set off by friction, sparks, or ordinary shock — it requires a blasting cap to detonate it.

Under all conditions it pays to

"Hook Up and Detonate with PRIMACORD"

Ask your explosives supplier
or write us direct for further facts

THE ENSIGN-BICKFORD COMPANY
SIMSBURY, CONNECTICUT
Also Safety Fuse since 1836

Made in several types. **PLAIN PRIMACORD** for shallow holes and surface trunk lines; **REINFORCED PRIMACORD** for deep holes and resistance to abrasion; **WIRE COUNTERED PRIMACORD** for deep, ragged holes; and **PLASTIC REINFORCED PRIMACORD** for deep, wet holes and river crossings.

Use PRIMACORD®

The PROVED and APPROVED DETONATING FUSE

25-50% MORE CAPACITY with KUE-KEN*

Kue-Ken Crushers Offer the Only Successful New Jaw Crusher Design in 90 Years.

25-50% More Capacity with Kue-Ken

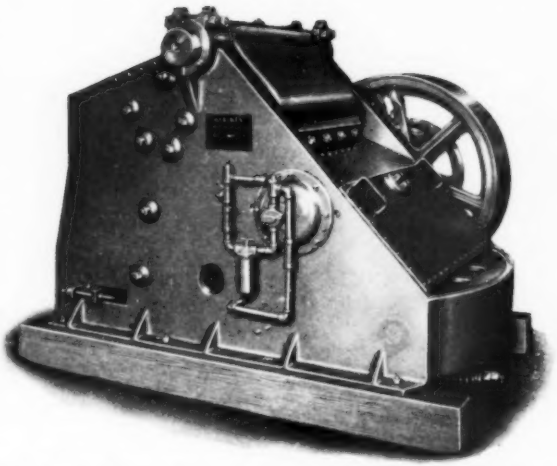
Yes! this is true. Kue-Ken Crushers operate at normal speed of 375 crushing strokes per minute. This is 25-50% faster than any other crusher . . . gives 25-50% more capacity. Higher speed makes finer, more uniform product. Meets states' specifications easier. Kue-Ken's exclusive principle of "Crushing without Rubbing" gives 5-10 times longer jaw plate life, more capacity on less power.

Modern Design

Kue-Ken banishes forever the grease cup and oil can. Kue-Ken operates with "crankcase type" sealed-in, filtered oil, pressure lubrication system. Change oil only twice a year. Automatic protection against tramp iron. Safety device instantly releases fly wheel, quickly, easily reset. No breaking or shearing parts.

Let Kue-Ken Work for You

There is no secret to Kue-Ken efficiency. Let us refer you to operators who have changed to Kue-Ken. They never go back to old style crushers.

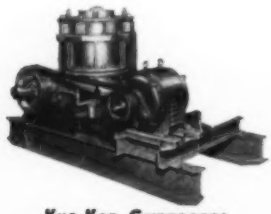


No. 80 Kue-Ken 36" x 10". 50-60 tons per hour at 1 inch setting. 50 H.P. maximum. No heavy fly wheels required or massive foundation, yet operates at 375 RPM . . . 25 to 50% faster than other crushers.

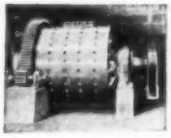
Sizes 12" x 7" to 48" x 60"

Get Complete Facts — Write for Bulletins

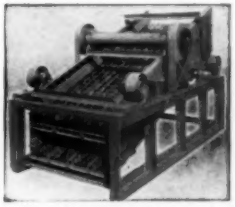
LUND MACHINERY CO.—Salt Lake City, Utah; CLOSNER EQUIPMENT CO.—San Antonio, Texas; WASHINGTON MACHINERY & STORAGE CO. —Seattle, Wash.; CONSTRUCTION EQUIPMENT CO.—Spokane, Wash.; MIGULA & CO.—Pasadena, Calif.; EDWARD L. KROPP CO.—Portland, Ore.; CAL-ORE MACHINERY CO.—Medford, Ore.; ANAHUAC MACHINERY CO. — Mexico City, Mexico; UNIVERSAL EQUIPMENT CO. — Vancouver, B. C.



Kue-Ken Gyracones



Rib-Cone Ball Mills



Overstrom Screens

*Pronounced Que-Ken. U.S. and Foreign Patents Pending.

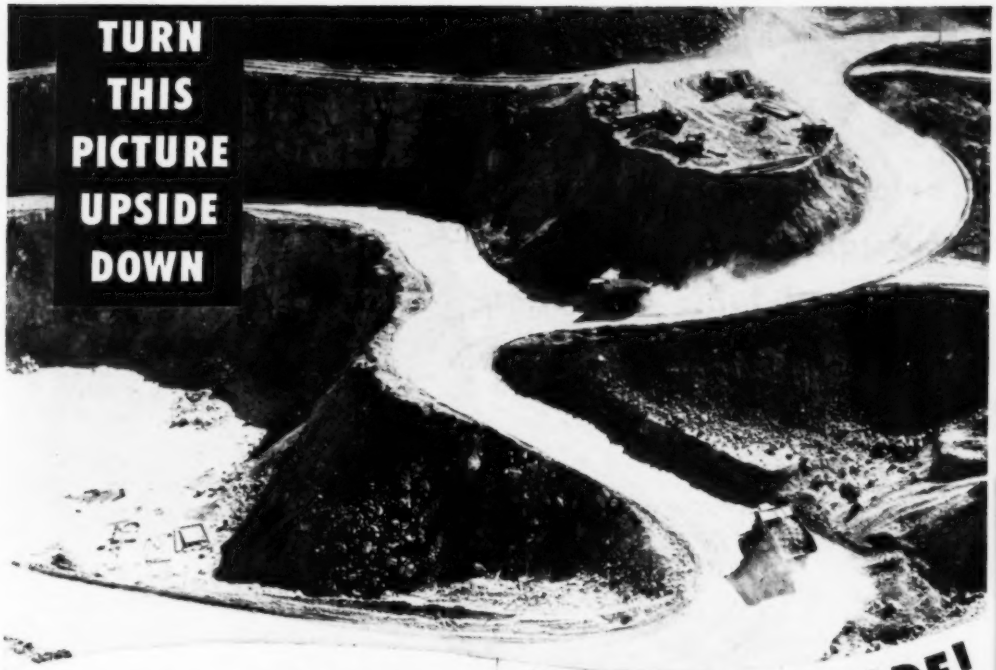
453 CHESTNUT ST. • OAKLAND 20, CALIFORNIA

STRAUB MFG. CO.

Kue-Ken Balanced Crushers	Rib Cone Ball Mills	Overflow Classifiers
Kue-Ken Simplex Crushers	Concentrating Tables	Feeders
Kue-Ken Gyratory Crushers	Overhead Eccentric Crushers	Screenwheel Classifiers

Pennsylvania Crusher Co., Exclusive Licensed Eastern Manufacturer and Distributor Broad and Arch Streets, Philadelphia, Pennsylvania.

Sir W. G. Armstrong Whitworth & Co. (Ironfounders) Ltd., Authorized Licensed Manufacturer and Distributor Close Works, Gateshead-upon-Tyne, England.



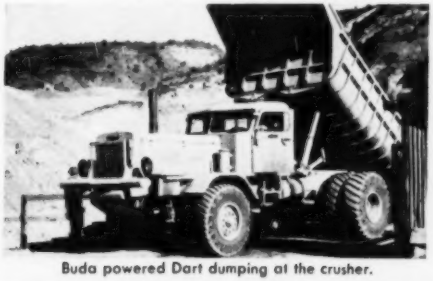
Any way you look at it... IT'S A TOUGH GRADE!

yet BIG BUDA diesels are cutting haulage costs every day!

14 Buda-powered haulage units are roaring up this tough grade . . . 2/10 of a mile with 5 switchback turns . . . hauling payloads up to 22 tons in faster time at a considerable reduction of their former cost.

The extra horsepower and 13 to 25% more displacement . . . greater lugging ability with 9 to 23% more torque of BIG Buda Diesels is paying off at this Bagdad Copper Corp. pit in higher production and lower costs. In many instances, the Budas are going more than 6000 hrs. before overhaul—another factor in lowered costs.

8-DAS-1125 350 HP at 2100 RPM



Buda powered Dart dumping at the crusher.

BC-18

Whatever your power requirements, there's a money-making Buda dyna-swirl Diesel to fit your needs. See your nearby Buda Distributor today. Write for Bulletins and data. *The Buda Company, Harvey, Ill.*

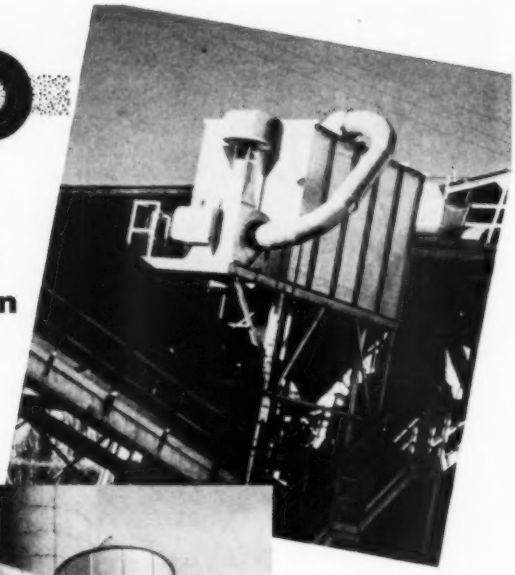
BUDA

Manufacturers of Diesel and Gasoline Engines, Maintenance of Way Products, Lifting Jacks, Earth Drills and Material Handling Equipment

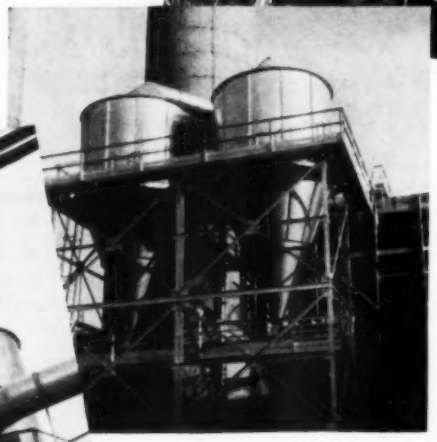
Norblo

helps you to achieve outstanding efficiency in dust and fume collection

with these three important systems



Automatic Bag Type



Cyclone

Hydraulic

Norblo *Portable* Dust Collecting Units, bag or filter types, give you localized dust control. Comply with all state and city codes. Three sizes, six rating selections from 300 C.F.M. to 1350 C.F.M. Write for Bulletin 163-5.

Dust and fume control ranks high among the facilities considered necessary in modern industrial operations. Now you figure the economy of safeguarding against explosions — of increasing the general efficiency of your plant — of salvaging valuable fumes and dusts.

Norblo makes three principal types of collection systems — engineers each installation from first hand experience of 40 years in many industries. High-efficiency equipment having the correct factors to suit your needs includes the Norblo guarantee of performance, economy and low maintenance. Before you decide on any fume or dust collection equipment consult the Norblo engineering department.

THE NORTHERN BLOWER COMPANY

Engineered Dust Collection Systems for All Industries

6407 BARBERTON AVE. • CLEVELAND 2, OHIO

...with PERFORMANCE UP

COSTS GO DOWN!

For Top Performance Specify

LULL Shoveloader

For high profits and low costs you need top performance from your equipment. Shoveloader's value as a real money maker is based on its proven ability to move more materials . . . faster and at lower cost.

Shoveloader's *power crowd* always scoops up a full bucket. The operator has finger-tip, hydraulic control of crowding, hoisting and tilting at all times. Shoveloader's higher lift and longer reach gets in close—loads bins and trucks from one position . . . cuts backing and turning. These operating features add up to a faster loading cycle—more material moved per day, per machine, per operator.

Loading, digging, crowding, bull dozing, snow removing . . . Shoveloader's superior performance can earn you bigger profits!

Get all the facts on the Lull Shoveloader! See your Lull Distributor, Today!...or Write for Bulletin!

LULL Manufacturing Company

356 W. 90th Street • Minneapolis 20, Minn.

Let's look through the album together . . .

Your Atlas representative carries with him these days an album of "machine gun" photos of many blasts. Each blast illustrates a point and serves as a reminder of the principles that lie behind good blasting.

The photos in this album help answer some of the questions at the right—all of them timely, interesting, and important today.

Why not write or phone for a date? Or, plan to spend a pleasant and profitable hour looking through the album together the next time your Atlas representative calls.

Does a column of explosives shoot instantaneously?

Is the point of initiation important?

Which is the best point of initiation to get complete confinement of the explosives gases?

When does detonation from *top* of the hole have distinct advantages?

Under what conditions does detonation from the *bottom* of the hole improve results greatly?

What improvements in control, fragmentation, and reduction of noise can be obtained by milli-second delay detonation?

How can milli-second delays be used to best advantage?

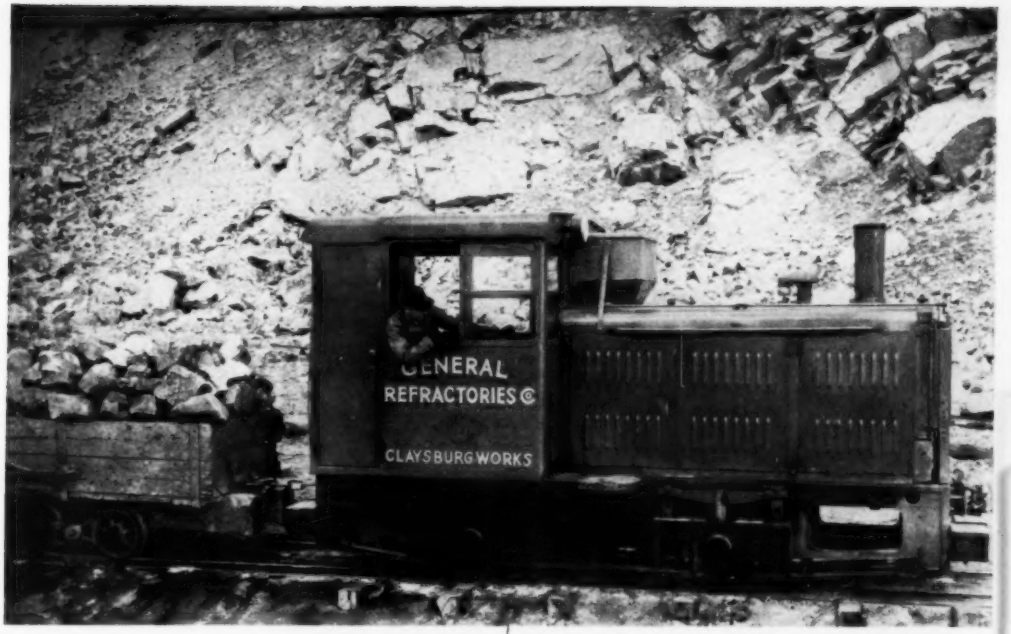
ATLAS EXPLOSIVES

ATLAS

"Everything for Blasting"

ATLAS POWDER COMPANY • WILMINGTON 99, DELAWARE

Offices in principal cities



It's a challenge that PLYMOUTH can answer!

There's rough going for this 12-ton narrow gauge Plymouth Locomotive—hauling ganister at the Claysburg quarry of General Refractories Company, Philadelphia, Pennsylvania.

Rough going—because this rugged switcher is charged with hauling 8 to 14 loaded cars over four miles of mountainside track, around 25° curves, up and down a 5% grade.

But it's a challenge that Plymouth can answer —*with power and economy to spare!*

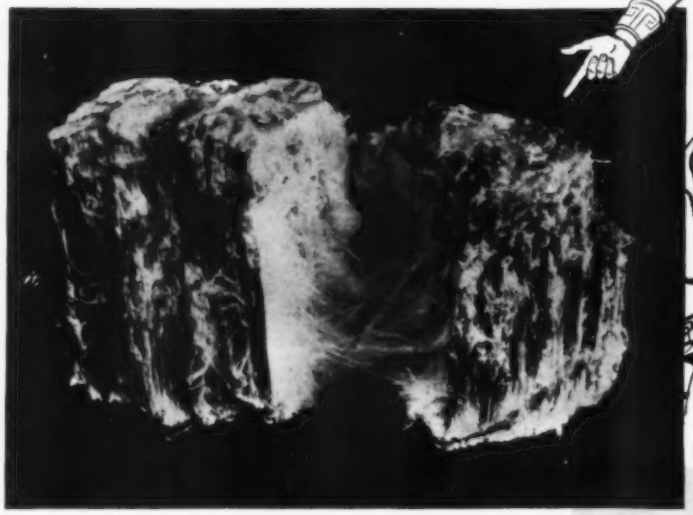
"Our Plymouth is perfect for the job," says H. F. Greene, Assistant General Works Manager. "Maintenance is low, efficiency has been increased, and definite savings are being made."

Operators in every branch of Industry have improved switching and hauling operations with Plymouth Locomotives. Find out how Plymouth can help cut your costs. Completely new catalog describes 3-ton to 70-ton models . . . gasoline, Diesel, Diesel-electric . . . narrow and standard gauge . . . mechanical and hydraulic drive; send for your free copy today! PLYMOUTH LOCOMOTIVE WORKS, Division of The Fate-Root-Heath Company, Dept. A-15, Plymouth, Ohio.

PLYMOUTH LOCOMOTIVES

PLYMOUTH LOCOMOTIVE WORKS, DIVISION OF THE FATE-ROOT-HEATH COMPANY, PLYMOUTH, OHIO

"Threads of Gold"
for a
ROMAN TOGA

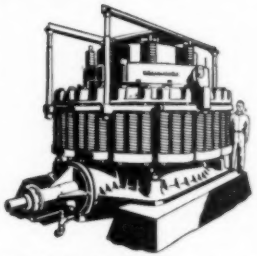


The mineral *Chrysotile,* meaning golden fibers, or threads, supplies over 90% of the world's asbestos requirements. Called the "miracle mineral" by the ancients, the Roman naturalist Pliny (23—79 A.D.) refers to the use of such material as "a rare and costly cloth" used for the funeral garments of kings.

The secret of the great usefulness of asbestos lies in its unique combination of fibrous structure, fire and water resistance, flexibility and strength. Since the profitable recovery of asbestos fiber depends upon fine crushing without destroying fiber length, a crusher that will perform such functions economically, and will produce large quantities of finely crushed material, is essential.

Proof of the world-wide acceptance of *"SYMONS"* Cone Crushers in asbestos production is found in the field, where practically every major producer employs these high capacity, economical machines . . . *as in all of the great ore and industrial mineral operations the world over.*

NORDBERG MFG. CO., Milwaukee, Wisconsin



"SYMONS" Cone Crushers . . . *the machines that revolutionized crushing practice* . . . are built in Standard, Short Head, and Intermediate types, with crushing heads from 22 inches to 7 feet in diameter—in capacities from 6 to 900 tons per hour. C252

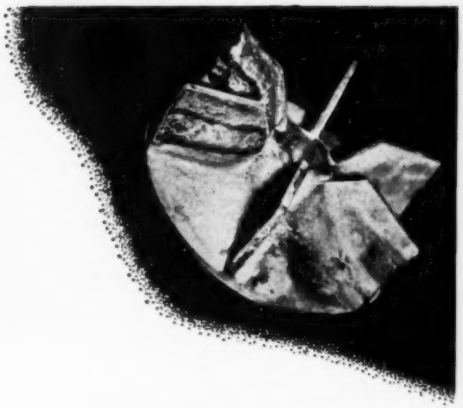
"SYMONS" . . . A NORDBERG TRADEMARK KNOWN THROUGHOUT THE WORLD

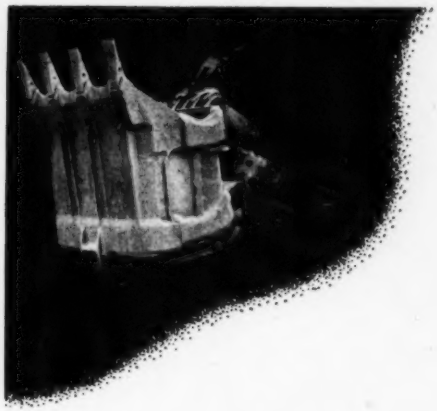
NORDBERG

MACHINERY FOR PROCESSING ORES and INDUSTRIAL MINERALS

NEW YORK • SAN FRANCISCO • SPOKANE • WASHINGTON • TORONTO
MEXICO, D. F. • LONDON • PARIS • JOHANNESBURG

NAME YOUR HARD-FACING JOB!





WEAR-ARC

hard-facing electrodes will do it . . .

- ★ *BETTER*
- ★ *FASTER*
- ★ *CHEAPER*

EXPERIENCE PROVES that to reclaim worn equipment and parts . . . to hard-face against excessive wear . . . *Wear-Arc* hard-facing alloys are tops. Equipment life is increased three, four, or more times . . . welds last longer . . . resist abrasion and impact better. Use the seven basic *Wear-Arc* types, singly or in combination — then judge for yourself, strictly on the basis of *results.*

★Contact your Alloy Rods Distributor or write for Wear-Arc Bulletin 5651.

Alloy Rods Co.

ALLOY RODS COMPANY

No Finer Electrodes Made . . . Anywhere

YORK, PENNSYLVANIA

AR-3

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PIT AND QUARRY

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editorial

Will Freedom Be Sold Out?

"IT would be ironic tragedy if soldiers drafted to fight for freedom in Korea and Europe found on returning to civilian life that, while they were gone, they had been excluded from opportunity to earn a living in most American industry except on condition of their joining and paying tribute to some labor union. Yet that is likely to happen. To make the irony complete, workers' freedom will be sold out in the name of aiding freedom's defense.

"The Wage Stabilization Board, according to the usually reliable Washington grapevine, is about ready to recommend the union shop—requiring compulsory union membership—to settle the steel and two other disputes before it. Such a recommendation, technically not binding but actually having the tremendous weight of government power in a national emergency behind it, would set a pattern that few employers could resist."

These words form the opening paragraphs of an article in the February 11, 1952, issue of *The Freeman* by Joseph H. Ball, now editor of *The Joe Ball Washington Letter*, senator from Minnesota from 1940 through 1948 and an authority on labor relations and labor legislation. A similar warning is contained in the February, 1952, issue of *Industry's View*, published by the National Association of Manufacturers and in various other publications. The importance of this subject to every American is so great, and the danger to our domestic freedom so real that the situation should be brought to the attention of everyone before it is too late.

EARLY in the spring of 1951, when union leaders were on strike against wage stabilization, they demanded that the Wage Stabilization Board be given disputes-settling power as a condition of their return to membership on that and other defense agencies. This was done, giving WSB the power practically to force a union shop on all major industry. Now WSB is under pressure from union officials to "recommend" the union shop in three dispute cases before it involving 650,000 steel workers, 10,000 employees of Douglas Aircraft and 25,000 employees of the Boeing Airplane Co. In addition, a Presidential Emergency Board has before it under the Railway Labor Act the demand of 17 A.F.L. unions for a union shop covering 1,000,000 non-operating employees on all railroads. In all of these cases the unions insist that there can be no settlement of the disputes unless non-member employees are compelled to join the union.

Union leaders argue that the union shop is necessary to protect union members against employer discrimination for union membership or activity. This argument at one time had some merit but few employers now would practice such discrimination, even if there were no federal law against it. They also argue that it is unfair for non-members to benefit from a union's efforts without helping to support the union. This argument is plausible, but it ignores the fact that there are many reasons other than the payment of dues which keep employees from joining certain unions. They may believe that the union is neglecting the handling of grievances, that it is calling frequent or unnecessary strikes, that it imposes artificial work restrictions; or they may disagree with its political or other objectives.

UNION leaders also claim that the union shop raises employee morale, relieves the leaders from the necessity of carrying on continuous organizational activity, and enables the unions to co-operate more fully with the employer. More often, however, employee morale falls because union leadership becomes arrogant and dictatorial when it no longer needs to cultivate the members' good will and support. The construction and maritime industries, which have had compulsory membership the longest, have far more disputes and stoppages than most other industries.

The basic argument against the union shop, however, is its violation of individual freedom. "The issue," to quote Mr. Ball again, "is whether any man or woman should be forced, under penalty of loss of livelihood, to join and support a particular private organization (whether it be a church or union or any other group). If a man may be compelled to join a union in order to hold a job, the principle is established that any politically powerful group may compel minorities to join and support it. To the extent that this principle is accepted and extended, Americans sacrifice their freedom and become subjects of a tyranny. The individual citizen must keep in well with the agency that controls his livelihood, or starve.

"The American people," Mr. Ball continues, "could easily prevent this sell-out of freedom at home. If they ever realize what was happening and its significance, their flood of protests to the WSB, the White House, and Congress would stop the whole thing. In an election year even bureaucrats are sensitive to public pressure. The difficulty is that so few of us realize what is happening. Apparently union compulsionists are banking on our ignorance and apathy."

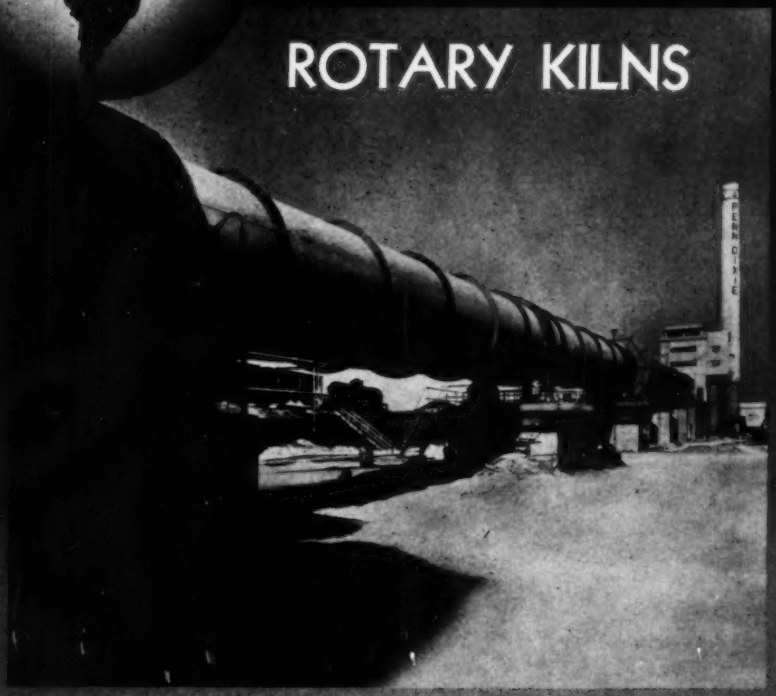
IN closing, Mr. Ball says that if you believe government should *not* order a union shop, you can tell it so by:

1. Wiring, writing or sending a post card to your Congressmen and your two Senators. (Ask them to protest to the Wage Stabilization Board.)
2. Wiring, writing or sending a post card to:
   "Public Members,
   Wage Stabilization Board
   Federal Social Security Building South
   Washington, D. C."
3. Wiring, writing or sending a post card to:
   "Industry Members
   Wage Stabilization Board
   Federal Social Security Building South
   Washington, D. C."
   (Let the Industry Members know that you have done 1 and 2 above.)
4. Telling your neighbors and associates what you are doing and asking them if they will do the same.

Walter E. Trauffer

SMIDTH

ROTARY KILNS



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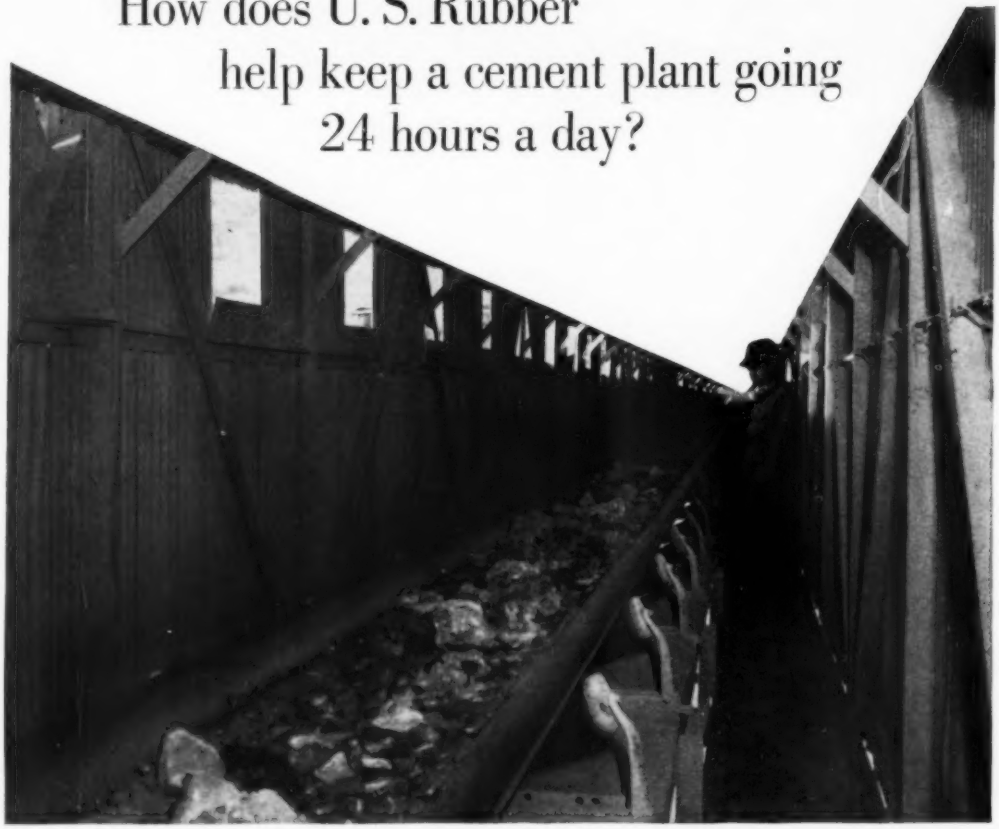
How does U. S. Rubber help keep a cement plant going 24 hours a day?



U. S. Rubber engineer inspecting belt. Inspection is a part of U. S. Rubber's continuous-servicing policy. View is looking down gallery to primary crusher.

(left) Overall view of cement plant, showing belt galleries connecting primary crusher plant (at right) with transfer house and mill.

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U.S. Rubber conveyor belts are the lifeline of the plant. They help maintain the uninterrupted operation that is essential for the plant's economical production. These belts, as they carry the limestone from the pit to the kilns, withstand the abrasive action of the limestone all around the clock, seven days a week, handling 600 tons per hour.

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news of the industry

PIT AND QUARRY

Sand, Gravel Industries Freed from Renegotiation Under Statute of 1951

In a statement prepared by John T. Sapienza, tax counsel for the National Sand and Gravel Association, members were informed that the Renegotiation Board has issued tentative regulations, under the Renegotiation Act of 1951, calling for the exemption of sand and gravel, including industrial sand, from the obligation to renegotiate under that statute. According to Mr. Sapienza, "neither profits from contracts with government agencies for the sale of sand and gravel (including industrial sand), nor profits from subcontracts under such contracts, will be subject to renegotiation".

This action continues the policy of excluding the industry from renegotiation which was established during World War II. The sand-and-gravel industry was also exempted from renegotiation under the Renegotiation Act of 1948. Due to the efforts of Vincent P. Ahearn, executive secretary of N.S.G.A., in 1950, the Ways and Means Committee of the House of Representatives at that time rejected a recommendation of the Renegotiation Board which, if accepted by Congress, would have subjected the industry to renegotiation.

Lawrence Stockholders Reach Agreement on Stock Sales

Stockholders of the Lawrence Portland Cement Company who objected to the company's merger with Dragon Cement Company have reached an agreement with the company to accept $27.125 a share for their holdings.

Under Pennsylvania laws stockholders dissenting to a merger must be paid the "fair value" of their stock if they so request.

Aluminium, Ltd., Launches Works Expansion at Jamaica

According to Nathanael V. Davis, president of Aluminium, Limited, of Montreal, Canada, this firm has started a 150 percent expansion of its bauxite-alumina production facilities in Jamaica, B.W.I., through an additional investment of at least $20,000,000.

With the completion of this program the capacity of the company's Jamaica operation will be increased from 200 short tons to 500 tons of alumina per day, and later to 740 tons daily. Aluminium, Ltd., owns 30,000 acres, including about 5,000 acres of bauxite deposits, on the island.

Lehigh's Metaline Falls Plant Installs Dust Collecting Unit

Officers of the Lehigh Portland Cement Company's Metaline Falls, Wash., plant have made final arrangements for the installation of dust collectors. A. W. Schaeffer, plant manager, indicated that installation will be started at once.

James T. Rowe, representing the Western Precipitation Corporation, Los Angeles, is in charge of arrangements for the installation.

The Department of Natural Resources of Ohio has announced the publication of *Limestones of Eastern Ohio*, complied by R. E. Lamborn. This is a companion volume to Bulletin No. 42, *Dolomites and Limestones of Western Ohio*, by Wilber Stout, published in 1940. Price, $2 per copy.

Coming Events

April 7-9, 1952—Cleveland. Seventh annual meeting and lubrication show, American Society of Lubrication Engineers. Hotel Statler.

May 8-10, 1952.—Hot Springs. 50th annual convention, National Lime Association. The Homestead.

May 14-16, 1952—Hot Springs. 17th Annual meeting, National Industrial Sand Association. The Homestead.

June 23-27, 1952—New York. 50th anniversary meeting and exhibit, American Society for Testing Materials. Hotels Statler and New Yorker.

Lone Star's New Plant At Maryneal Begins Full-Scale Production

On January 22 the Lone Star Cement Corporation announced the first shipment of cement from its newly completed plant at Maryneal, near Sweetwater, Tex. Full-scale operation has begun at the big mills, which have a capacity of approximately 4,200 bbl. of cement per day.

The work carried on in the 12 concrete structures comprising this plant requires 1,200 tons of limestone and clay each day, and 300 lb. of explosives are used in the quarry. To keep the equipment in good running order, the men in charge of machinery maintenance apply 375 lb. of lubricants. About 4,000,000 cu. ft. of natural gas per day fire the two big kilns, each 340 ft. long and 10 ft. in diameter.

Construction work was done by the Walsh Construction Company and Gifford-Hill & Company, Inc. The raw mix and finished cement silos were built by the MacDonald Engineering Company.

Consolidated, General Sales Rise, Earnings Decline in '51

Net earnings of the Consolidated Cement Corporation, Chicago, Ill., for the 12 months ended December 31, 1951, totaled $452,700 after provision for federal income taxes, as compared with net earnings of $538,600 for the corresponding 12 months of 1950, according to Smith W. Storey, president.

Sales in the latest year amounted to $4,972,700, as compared with $4,611,300 in 1950. Federal income taxes increased from $465,000 to $598,000.

General Portland Cement Company in the 12 months ended December 31, 1951, earned $4,532,400 after taxes, as compared with $5,907,700 in the corresponding period of 1950.

Sales of General Portland in 1951 were up to $27,121,000 from $24,413,700 in 1950. Taxes increased from $5,100,000 in 1950 to $7,207,000 in the latest year.

Col. Henry Crown has announced the removal of the general office of Material Service Corporation and its subsidiaries from 33 N. LaSalle Street to its own building at 300-308 W. Washington Street, Chicago, Ill.

January Building Volume In East and Midwest Shows General Decline

Construction contracts awarded in the 37 states east of the Rockies were off 14 percent in January as compared with January, 1951, it was reported by F. W. Dodge Corporation. The January, 1952, figure was $902,091,000, as against $1,043,248,000 in January of 1951.

Non-resident awards for the first month of the new year totaled $357,676,000 or 22 percent less than the $461,016,000 total for January a year ago.

Residential contracts of $337,721,000 were down 20 percent from the $420,918,000 of January last year.

Public and private works and utilities totaled $206,694,000, a gain of 28 percent over January, 1951. That total was $161,314,000.

John Francis Neylan Dies— Lone Star Vice-President

John Francis Neylan, 59, a vice-president of the Lone Star Cement Corporation, died on February 14 at his home in Flushing, Queens, N. Y. Mr. Neylan joined Lone Star after his discharge from the United States Army, in which he served during World War I. His first position was that of assistant to the traffic manager. He began his duties in June, 1922.

After serving as assistant sales manager of the concern's Albany, N. Y., office, he was appointed assistant sales manager at New York in 1931. He became general sales manager in 1939, and vice-president in 1945. In his last position he was in charge of sales.

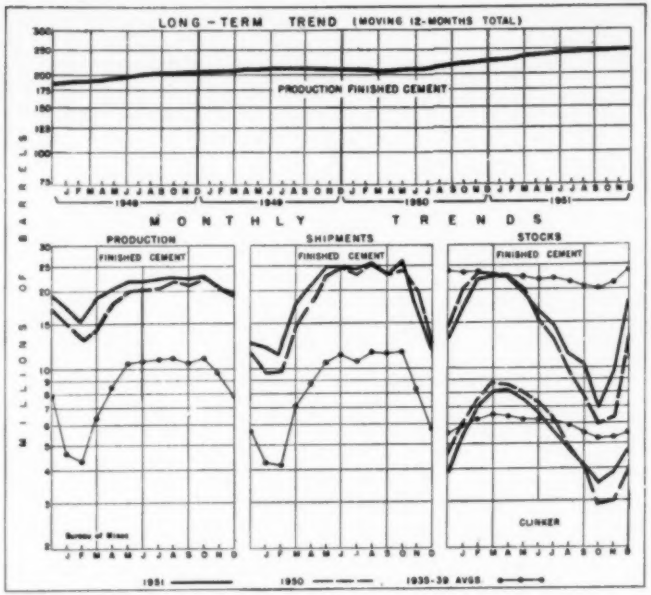
Mr. Neylan was also active in the work of the Portland Cement Assn.

German Visitors Impressed By Potash Mining Methods

Recent German visitors at the Carlsbad (N. M.) potash mining operations of the International Minerals and Chemical Corporation—Dr. Otto Karsten and Ulrich Feit—expressed amazement at the simplicity of methods employed in comparison with those used in German potash mining.

Mr. Feit is manager and Dr. Karsten manufacturing supervisor for a German potash firm with headquarters at Bad Salzdetfurth. Both men were hosts to International's President Louis Ware and Vice-President A. N. Into while they were visiting European potash operations recently.

In the German mine the raw material is found 2,800 ft. below the surface. Control of underground water is the most serious problem in this operation, since the water occurs in rock strata just above the potash deposits, under great pressure. Circular shafts, cased with 4-inch thick ribbed steel casing, are sunk through the water-bearing areas to withstand the tremendous pressure. The German visitors stated that they have found the most efficient method of refining is one similar to that used at International's mine.



SUMMARY—The portland cement industry produced 19,874,000 barrels of finished cement in December, 1951, as reported to the U. S. Bureau of Mines. This total is 4 percent greater than that reported in December of the previous year. Mill shipments totaled 11,790,000 barrels—6 percent less than in December, 1950, while stocks on December 31 were 38 percent higher than on the corresponding date in 1950. Clinker output during the month amounted to 20,780,000 barrels—an increase of 3 percent over that for December, 1950.

PRODUCTION—The output of 19,874,000 barrels of finished cement in December, 1951, came from 153 plants located in 36 states and Puerto Rico. In the same month of 1950, 19,116,000 barrels were produced in 150 plants. Clinker production was up 3 percent over the December, 1950, total.

SHIPMENTS—Mill shipments of 11,790,000 barrels represented a 6 percent decrease from the figure reported in December, 1950. Shipments were higher in eight districts and lower in 11 districts, as compared with those reported in December of the previous year. The percentage changes ranged from an increase of 37 percent in the Ohio district to a decrease of 32 percent in the Colorado-Arizona-Wyoming-Montana-Utah-Idaho district. Other marked increases were shown in the western Pennsylvania-West Virginia, Illinois, and Iowa districts.

STOCKS—On December 31, stocks of finished cement amounted to 18,000,000 barrels—38 percent higher than the December 31, 1950, figure, while stocks of clinker were 4,700,000 barrels—20 percent above the December 31, 1950, total.

Arundel Corp., U. S. Gypsum Win Management Awards

The Arundel Corporation, Baltimore, and the U. S. Gypsum Company, Chicago, have been awarded Certificates of Management Excellence for the year 1951 by the American Institute of Management, New York. According to Jackson Martindell, president of that non-profit foundation, credit is given for excellence in economic function, corporate structure, health of earnings growth, fairness to stockholders, research and development, directorate analysis, fiscal policies, production efficiency, sales vigor, and executive evaluation.

Both Arundel and U. S. Gypsum were on the list of "excellently managed" firms in last year's competition.

Corvallis Sand & Gravel Co. Celebrates 40th Anniversary

The Corvallis Sand and Gravel Company, Corvallis, Ore., celebrated its 40th anniversary in December, and offered a bonus to all its customers in recognition of the fact. J. H. Gallagher, president of the firm, founded the company in 1911, and has guided its progress through the years.

John H. Gallagher, Jr., is manager and secretary-treasurer of the company, and Don A. Gallagher, a nephew of J. H. Gallagher, is general superintendent. U. L. McFarland has been employed at the Corvallis firm more than 35 years, and D. G. Hastie has served 34 years, while many of the employees have been with the company more than 30 years.

Production of cement in Colombia has increased from 300,000 tons in 1945 to 630,000 tons in 1951. Cement export in 1951 reached a total value of $500,000.

The United States Lime Products Corporation and its sales division, Arrowhead Lime and Chemical Company, have announced the removal of their Los Angeles, Calif., offices to 175 South Alvarado Street, Los Angeles 4, Calif.

Richard L. Davis Named Secretary-Treasurer Of Perlite Institute

J. John Brouk, president and chairman of the board of directors of the Perlite Institute has announced that Richard L. Davis has been named secretary-treasurer of the organization, effective February 15, 1952.

Mr. Davis comes to the perlite industry with a wealth of comprehensive associa-

Richard L. Davis

tion management experience and an excellent record of achievement in industry. During his employment by the management engineering firm of Stevenson, Jordan and Harrison from 1934 to 1941, he has served as a statistician and successively thereafter in various executive and managerial capacities on an industry scale in the machine waste, floor and wall tile, salt, twisted jute packing and oakum, anthracite coal, white corn milling, and lighting equipment industries.

For the last 11 years, as secretary of the Industrial Mineral Wool Institute, he has been responsible for the establishment of the industry's product certification program and the promulgation of many standards and specifications in the Bureau of Standards, the American Society for Testing Materials, and the Technical Committee on Heat Insulations of the Federal Specifications Board.

He is affiliated with the American Trade Association Executives, the American Society for Testing Materials, the Thermal Insulation Society and the Commercial Standard Advisory Committee of the U. S. Department of Commerce.

Steel Dredge to Work Rivers In Mississippi River Basin

T. R. McElwee, president of TRMCO, Inc., Chicago Heights, Ill., has announced that the firm is entering the sand-and-gravel dredging business on the open market on any navigable stream accessible from the Mississippi River.

In describing the dredge *TRMCO*, Port of Chicago, Mr. McElwee states that it is equipped with a 10-in. hydraulic dredge pump and a complete sand-and-gravel processing plant which is capable of processing from one to four grades of sand and/or gravel simultaneously. The dredge has loading facilities which can handle from one to four grades of material directly into barges. According to Mr. McElwee, "it processes and loads finished and marketable sand and gravel at the rate of approximately 200 cu. yd. per hour, with the employment of just three men". The craft is an all-steel, electric, self-contained unit.

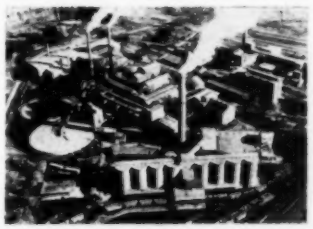
New Method for Treating Arkansas Bauxite Reported

A new process for beneficiating Arkansas bauxite ores that have a high iron content—ores that up to now have been utilized for commerical production of abrasives or alumina—is described in a Bureau of Mines report released today by Secretary of the Interior Oscar L. Chapman.

A free copy of Report of Investigations 4841, *Beneficiation of High-Iron Arkansas Bauxite Ore*, may be obtained from the Bureau of Mines, Publications Distribution Section, 4800 Forbes Street, Pittsburgh 13, Pa.

The Philip Carey Manufacturing Company, Cincinnati, O., has reported progress in its diamond drilling at the Stark asbestos deposits near Washington, Calif. Surface trenching tests started last May indicated more than 4,000 ft. of drilling would have to be carried on to establish depth and dimensions of the principal ore body.

Cover Picture....



• Pictured on our cover this month is the Missouri Portland Cement Company's modern plant at St. Louis, Mo. At the left are the 180- and 200-ft. diameter thickeners in which the limestone and shale slurry overflowing the classifiers is thickened. The large raw-grinding mills are close-circuited with the classifiers. Correction and blending are accomplished in eight slurry agitators; these are followed by a slurry mixer for feeding the new kilns. The 6,500-bbl.-per-day plant is the most recent step in Missouri Portland's expansion program, and represents a completely new setup of cement-making facilities, rather than merely features added to the former works.

Reynolds Jamaica Plant To Raise Bauxite Output To 750,000 Tons Yearly

Slated for completion in the immediate future is the bauxite reduction plant under construction in Jamaica for the Reynolds Metals Company. Work on a pier, storage bins, an overhead tramway, and processing and power plants is being speeded up in an effort to finish the project by April.

Originally the firm's plans called for an output of 400,000 tons of Jamaica bauxite a year by the company's operating subsidiary, Reynolds Jamaica Mines, Ltd. Now, however, the program has been stepped up to 750,000 tons a year. Reynolds is spending $17,500,000 on the project.

First shipment of Jamaica bauxite to the firm's aluminum plant in Arkansas is expected to leave the island about September 1. A company spokesman indicated that the Jamaica material will merely supplement and not replace Arkansas bauxite in the firm's operations.

Filtrol Corp. Announces Research Laboratory Plans

Officials of the Filtrol Corporation, major producer of petroleum cracking catalysts, adsorbents and related products, have announced the construction of a new 16,000-sq.-ft. research building to house its varied and greatly expanding research activities at Vernon, Calif. The building will incorporate the most advanced facilities for conducting research in product development and for efficient use of Filtrol products.

Giant Portland Cement Co. Issues 2% Stock Dividend

Stockholders of the Giant Portland Cement Company received a 2 percent stock dividend to stock of record December 5, 1951, in lieu of cash.

It was stated that construction is proceeding at a satisfactory rate on the addition to the firm's plant at Harleyville, S. C. Demand for the company's cement is higher than can be filled by the present facilities, but the addition will increase Harleyville's output by 1,000,000 bbl. annually.

The Florida Phosphate Division of the International Minerals and Chemical Corporation recently announced that its staff had achieved an all-time record for man-hours worked in open pit mining without a lost-time accident. The division operated for more than 1,650,000 man-hours without a lost-time injury.

The Northwest Gypsum Company, Huntington, Ore., has purchased a tram to carry gypsum from its Rock Creek mine near Weiser, Idaho, across the Snake River to a railroad siding in Oregon. Fred Sill, company general manager, reported that the tram will reduce the cost of transporting the product to the railroad from $1 to 15 cents a ton.

L. R. Sanderson, New Head Of National Gypsum Co., Makes Gypsum His Career

Lewis R. Sanderson, newly-elected president of the National Gypsum Company, entered the gypsum industry soon after his graduation from Iowa State College in 1914. He worked in a laboratory on quality control, served as a foreman of a mixing department, and became successively a mill foreman, superintendent of a mixing mill, and plant manager. At the time he joined National Gypsum, he was manager of the New York plant of the Atlantic Gypsum Company, purchased by National in 1936.

Lewis R. Sanderson

When the company was directed by the United States Government to build and operate a bomb-loading plant at MacGregor, Tex., during World War II, Mr. Sanderson was chosen to be general manager of the Bluebonnet Ordnance Plant. He was in charge of the operation for the entire duration of the wartime project. Under his direction Bluebonnet established unsurpassed records for safety and production.

In 1945 Mr. Sanderson returned to the Buffalo executive offices as director of construction and reconversion, a post in which he supervised National's post-war expansion and modernization program. Subsequently he was named vice-president, and a director. In 1950 he was made executive vice-president, and in December, 1951, he became president of National.

Basic Refractories Expansion Brings Big Things in Its Wake

What is said to be the world's tallest stone storage silo was recently completed at Maple Grove, O., for Basic Refractories, Inc., According to the firm's house organ, *Basic Blast*, the 12-bin structure, which rises 122 ft. into the landscape, was erected within an eight-day period by the MacDonald Engineering Company by means of the slip-form technique of pouring concrete. But that isn't all.

"Construction of our No. 4 kiln plant," reports the *Blast*, "will give us the two largest rotary kilns in the dead-burned dolomite industry. . ." Two steel smoke stacks will be so high—215 ft.—that they will be equipped with floodlights to meet the requirements of the Civil Aeronautical Commission. Ten of the 12 concrete piers for the new 390-ft. rotary kilns have been poured, and preliminary work on forms for the remaining two and the finished product and coal-handling section of the $35,000,000 plant are under way. Each kiln will be furnished with two synchronized driving pinions, with accessory motors, generators, and transformers.

For the concrete used in construction at Maple Grove Basic's own No. 8 stone is being used.

Old Colony Crushed Stone Co. Honors Plant's Safety Record

In celebration of having completed 260 days or 125,800 man-hours without a lost-time accident, the Old Colony Crushed Stone Company of Quincy, Mass., held a safety meeting banquet for the employees on December 19, 1951. Approximately 60 men were present.

Ernest Wilson, of the Fairfield & Ellis Insurance Agency, served as chairman. Speakers included Walter P. Burke, supervising safety engineer for Fairfield & Ellis, and Melville Stewart, general manager for Old Colony. Awards were presented by representatives of the insurance agency.

At the conclusion of the festivities each employee was presented with a wallet inscribed as follows: "Old Colony Crushed Stone Company—No lost-time accidents, 1951.

This is only one of the many instances of recognition given by management and workers to the importance of safety practices in nonmetallic minerals industries. The advantages—to both the operator and the employee—of setting up and following through on a good safety program should be implemented by every firm in our field.

• Participating in Old Colony's safety festivities were, left to right: Ernest Wilson, Fairfield & Ellis; Frank Mitchell, Old Colony office manager; Victor Orinofsky, company safety chairman; Joseph Cahill, sales manager; Melville Stewart, general manager; Francis Melaugh, construction engineer; and Walter Burke, Fairfield & Ellis.

Six DMPA Appointments Announced by Larson Complete Agency's Staff

Appointment of an assistant deputy administrator, three directors and two acting directors of the operating divisions of the Defense Materials Procurement Agency has been announced by Jess Larson, administrator. According to Mr. Larson, the appointments complete DMPA's organization in so far as the agency's major operations are concerned. The appointment of Howard I. Young as deputy administrator was announced on September 14, 1951. The appointments announced are as follows:

James Douglas, former deputy administartor of DMA, is assistant deputy administrator.

Tom Lyon, former director of the DMA's supply division, is director of the Domestic Expansion Division.

Charles E. Stott, former director of the Strategic Materials Division of the Economic Cooperation Administration, is director of the Foreign Expansion Division.

Harold Montag, director of the DMA's Requirements Division, is director of the Mining Requirements Division.

John G. Ford, former assistant to the assistant administrator of the General Services Administration for Defense Coordination, as acting director of the Contract Negotiations Division.

A. B. Parsons, former assistant director of the DMA's Supply Division, as acting director of the Program Development Division.

Mr. Larson stated that Mr. Douglas, as assistant deputy administrator, will work with Deputy Administrator Howard I. Young in coordinating the functions of DMPA's operating divisions.

Venezuelan Cement Concern Gets U.S. Expansion Loan

The U. S. Export and Import Bank has granted a $4,000,000 loan to Compania Anonima Venezolana de Cemento (Venezuelan Cement Company) for expansion of the Pertigalete plant. After the expansion program has been completed, at a cost of $12,000,000, production is estimated to increase from the present 85,000 tons to 480,000 tons a year.

According to the term of the contract, the loan will be repaid in 10 annual payments starting in 1954, with the backing of Corporacion Venezolana de Fomento (Venezuelan Development Corporation). Interest will be charged at 4½ percent per year.

The Johns-Manville Corporation of New York recently released the following annual report for the year ended December 31, 1951: Sales for 1951 reached $238,034,399, resulting in a net income of $24,530,509, equal to $7.76 a common share, as compared with $203,272,945 in sales, resulting in $22,814,491 net income, equal to $7.29 a common share for the previous fiscal year.

Chemical Industries Show Largest in 36 Years—Attracts 47,000 Visitors

Displaying 457 exhibits, the 23rd Exposition of Chemical Industries, held at the Grand Central Palace, New York, N. Y., on November 26-December 1, proved to be the largest and most colorful exposition in the 36-year history of the institution. Attended by 47,000, the affair encompassed the whole field of chemical influence in the industrial world, and revealed many substances and types of mechanical equipment never before publicly shown.

The entire program was indicative of the constant search for new products and processes which would greatly benefit the producer and manufacturer, and have a gratifying influence on business. Mechanical equipment for the process industries occupied the foreground of the exposition and included machinery for the preparation, combination, treatment, refining, and finishing of all manner of substances from the raw material to the packaging stage.

Many forms of grinding and pulverizing equipment and many exhibits dealing with equipment for the classification of materials, sifting, screening, and grading by size and weight were shown. Also, numerous innovations and improvements in materials of construction were revealed during the week, and an improved acid-resisting glass lining for storage tanks, chemical reactors, piping, valves, pumps, and other equipment was announced.

In the field of protection of surfaces against corrosive attack, one of the great industrial concerns has developed an anti-corrosive coating intermediate. This material permits the formulation of new coatings for a variety of needs, meets a corrosion-resistance level considerably higher than that obtainable with most conventional products.

Nevada Sulphur Holdings Producing 40 Tons Per Day

The Black Rock Desert Mineral Company is reported to be milling 40 tons of sulphur ore daily at its property at Sulphur, Nev. The company holds 1,100 acres of patented mineral land in the area, which is said to contain 5,000,000 tons of material running 20 to 35 percent sulphur.

Mining is proceeding in an open pit, and the processed product is shipped to San Francisco for distribution to North American and European agricultural markets.

The Huron Portland Cement Company, Detroit, Mich., has announced the purchase of a 321-ft., ocean-going vessel for service on the Great Lakes. The *Coastal Delegate*, which is scheduled to begin hauling cement in 1953, was formerly owned by the Southern Steamship Company of New York, and was used for carrying miscellaneous cargo. After alterations the ship will be brought through the Mississippi River and the Illinois waterway.

At the plant of the Cleveland Builders Supply Company, Cleveland, O., a 28-year-old 40-ton McMyler Interstate crane was recently converted from steam to diesel power with a 200-hp. Model NHIP-600 Cummins diesel torque converter unit. According to W. LaVoo, general superintendent of the operation, the fuel bill has been drastically cut since the shift was made from steam to diesel power. In addition, says Mr. LaVoo, no time is wasted in the morning in firing up, and the crane yields at least 2½ hours more of work per day.

Smythe Elected President Of Crane and Shovel Assn.

C. B. Smythe was elected president of the Power Crane and Shovel Association at its annual meeting in Washington, D. C., on January 9. Mr. Smythe is president of the Thew Shovel Co., Lorain, O., manufacturers of "Lorain" power shovels and cranes.

The Power Crane and Shovel Association is comprised of 16 manufacturers of power cranes and shovels in the classification known as "commercial sizes". These units are full revolving excavators ranging from ⅜ to 2½ cu yd. in capacity or lifting cranes up to 50 tons in capacity. About 95 percent of the power cranes and shovels manufactured fall within these limits, and the output of "commercial sizes" accounts for 80 percent of the dollar volume of the entire industry, which was approximately $350,000,000 in 1951.

C. B. Smythe

Penn-Salt Mfg. Executive Named OPS Division Chief

William P. Drake, vice-president of the Pennsylvania Salt Manufacturing Company, Philadelphia, has been named director of the Rubber, Chemicals and Drugs Division of the Office of Price Stabilization, to serve until July 1, 1952, according to an announcement by OPS Director Michael V. DiSalle.

Mr. Drake succeeds Thomas H. McCormack, who is returning to his duties as director of sales of the Grasseli Chemicals Division, E. I. du Pont de Nemours and Company, Wilmington, Del.

During his tenure as vice-president in charge of sales, Mr. Drake has headed the company's nine sales departments. He joined the firm in 1934 in its student training course, and then successively held the positions of salesman, manager of sales, and assistant vice-president of sales, before his appointment as vice-president in 1949.

Law May Compel Operators To Restore Land in Idaho

An initiative petition for an Idaho law to compel dredging operators to smooth over disturbed ground and replace water courses will be sponsored by the Idaho Wildlife Federation.

The measure requires that ground disturbed by dredge mining be smoothed over and water courses replaced for fish and wildlife habitat and recreation, requires that settling ponds be constructed to clarify waters, fixes penalties, and provides injunctive relief.

Aluminum Supply Short—Bauxite Output Up in 1951 Mines Bureau Reports

The supply of aluminum in 1951 fell far short of the demand although the production of primary aluminum increased throughout the year and the recovery of aluminum from scrap was 26,000 tons more than in 1950, according to the U. S. Bureau of Mines. Domestic production and imports of bauxite increased. Imports of aluminum slumped far below the 1950 level, and the recovery of secondary aluminum from scrap was retarded during the last half of the year because of the price ceilings placed on scrap and secondary ingot.

Domestic production of primary aluminum in 1951 was approximately 836,900 short tons. This was an increase of 16 percent over 1950, but fell short of the production expected at the start of the year by about 7,000 tons.

The domestic production of secondary aluminum was about 270,000 tons in 1951, an increase of 26,000 tons or 11 percent over the 1950 production. Recovery from old scrap declined in 1951. During the first half of 1951 secondary production was maintained at a rate of more than 300,000 tons per year.

During 1951 the bauxite industry was undergoing a major expansion to meet the increasing requirements of the domestic aluminum industry. As calculated from the production of primary aluminum, aproximately 3,350,000 tons of ore were consumed in the production of aluminum, which usually accounts for about 85 percent of the total consumption. The consumption of bauxite by the abrasive, chemical, refractory, and other industries also increased over the 1950 total figure of 442,000 tons.

Based on data for the first three quarters of 1951, domestic bauxite production was estimated at 1,800,000 long tons (dry basis) for the year. The average rate of production for 1951 was exceeded only during the critical war years, 1942 to 1944, when imports were partially cut off at a time of great demand. More than 98 percent was mined in Akansas, and the remainder in Alabama and Georgia. General imports were expected to reach a record high level, totaling approximately 2,900,000 long tons (as shipped basis). Surinam shipped about 83 percent of the imports, Indonesia 12 percent, and British Guiana 5 percent. Exports of bauxite totaled about 70,000 long tons (as shipped) in 1951. The increase largely reflected greater shipments to the Canadian side of Niagara Falls for the production of crude abrasives which were returned to the United States for final manufacture and consumption. Exports of bauxite concentrates and alumina were estimated at 15,000 tons.

Alcoa expanded its Bayer alumina plants at both Mobile, Ala., and East St. Louis, Ill., in 1951. Also, Alcoa initiated construction of a new alumina plant at Bauxite, Ark., which is designed to use the combination process in treating high-silica Arkansas ore. Kaiser plans to produce all of its increased alumina requirements by enlarging the facilities at Baton Rouge, Louisiana, to an annual capacity of about 800,000 tons. This plant will be adapted to treat both Jamaican and Surinam ore. Reynolds was enlarging the Hurricane Creek, Ark., plant to include modified Bayer equipment for using Jamaican bauxite. In addition, Reynolds was planning to construct a new modified Bayer alumina plant, which will be adjoining the new Corpus Christi, Tex., reduction plant. The total capacity of all the alumina plants will be about doubled by this expansion program.

Iron Ore Flotation Plant Is New Schroeder Venture

Under the terms of a transaction closed recently by the Schroeder Company of McGregor, Ia., 8,000 acres of rich iron ore land was acquired at Russellville, Ala., which gives Schroeder 13,000 acres of ore-bearing land.

This new firm, headed by E. C. Schroeder, who is also president of the E. C. Schroeder Company, Inc., has built washing and flotation facilities for processing iron ore (completed in August, 1951) in Alabama. Mr. Schroeder described these very modern facilities in an address before members of the American Mining Congress in October, 1951.

Originally Mr. Schroeder operated a crushed stone, riprap, and gravel business in McGregor. Later he formed a corporation known as the E. C. Schroeder Company, Inc., which has extensive operations in Isbell, Ala., Bagley and Wyalusing, Wis., and Glendo and Guernsey, Wyo. Crushed stone for paving, riprap for flood control projects, and material for the Chicago Burlington and Quincy Railroad line have been produced at these plants. Schroeders are now furnishing crushed stone for ballast to protect the tracks against floods.

Pullman Inc. Organization Opens Showroom at Chicago

An industrial showroom featuring the products of the Pullman-Standard Car Manufacturing Company and other subsidiary companies of Pullman Incorporated was opened to the public recently in the Pullman-Standard Building at Michigan and Adams streets, Chicago, Ill.

The 3,600-sq. ft. showroom uses displays to show the products of three companies, the first a builder of railroad passenger and freight cars, the second, a manufacturer of petroleum refining and chemical processing plants, and the third, a maker of highway truck trailers.

• Champ Carry and C. W. Bryan Jr. beside a 12-cu. yd. scraper.

The largest floor exhibit is a Pullman-Standard 12-cu. yd. scraper drawn by an International Harvester diesel tractor equipped with a Pullman-Standard bulldozer. The entire unit is 54 ft. long and weighs 77,000 lb. Other earthmoving equipment is also displayed.

The exhibits utilize pushbutton operations, scale, and full size models, cutaways, color and illuminated photographs, and other artwork to present the activities of the Pullman organization.

Pullman Incorporated is an outgrowth of the sleeping car business founded in 1867. The Pullman Company, the sleeping car operating subsidiary, was sold to a group of railroads in 1947 and now has no connection with the manufacturing activities.

Pullman Incorporated has the following operating subsidiaries: Pullman-Standard Car Manufacturing Company, builder of railroad passenger cars, freight cars, transit equipment, track maintenance machines, and road equipment and tractor accessories which were acquired from the Isaacson Iron Works in 1950; M. W. Kellog Company, designer and builder of petroleum refining and chemical processing plants, including the famous atomic plant at Oak Ridge, Tenn.; and Trailmobile Inc., builder of trailers of all types.

California Portland Cement Launches Dust Control Plan

In an announcement released to a San Bernardino, Calif., newspaper, L. E. Bancroft, vice-president and general manager of the California Portland Cement Company, described his firm's efforts to develop a successful dust control program.

According to Mr. Bancroft, a pilot plant was installed at Tolton, Calif., for the purpose of controlling the plant's dust problem. So promising did this initial installation appear, that officials put in a much larger unit. Results of this latter "test" plant proved satisfactory, and they have decided to install the first of a series of such units. The new system, which will be added in units, will probably cost about $1,000,000, Mr. Bancroft stated.

According to *Mineral Trade Notes*, published by the U.S. Bureau of Mines, the total cement output of French Morocco in 1950 was estimated at 320,000 tons, a substantial gain over the 1949 figure of 226,000 tons, but still insufficient to cover the country's annual requirements. Domestic consumption calls for about 500,000 tons annually. It is expected that the long-discussed plant at Mekens, when completed in 1953, will produce at least 450,000 tons per

New Posts Announced For Silcox and Jones On Penn-Dixie Staff

Two recent appointments in the Pennsylvania-Dixie Cement Corporation's organization were announced by E. P. Newhard, vice-president and operating manager. M. L. Silcox, formerly plant superintendent at the firm's Clinchfield, Ga., operation, was named assistant operating manager, with headquarters in Chattanooga, Tenn. He will be succeeded

John H. Jones

at Clinchfield by John H. Jones, who formerly served as plant engineer at the company's Plant No. 2.

Mr. Silcox received his initial training at Pratt Institute in Brooklyn, N. Y., and in the laboratories of the General Chemical Corporation. He entered the cement industry when he accepted a post in the laboratory of the Clinchfield Cement Corporation at Kingsport, Tenn., in 1921. In 1929 he became chief chemist at the Des Moines plant at the time of its acquisition by Penn-Dixie. He served in this capacity until his appointment as superintendent at Clinchfield in 1945.

Mr. Jones first became associated with Penn-Dixie in 1948, when he was employed as a student engineer at Nazareth. After his graduation from Lehigh University he returned to the company as an engineer-draftsman. Subsequently he served as plant engineer at Plant No. 6 and in the same post at Plant No. 2.

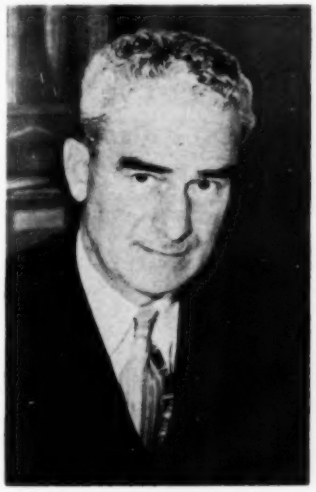
Old Sulphur Mine Drilled By Anaconda Copper Mining

Diamond drilling at the Leviathan sulphur mine near Markleeville, Calif., has been started by the Anaconda Copper Mining Company, New York. It was indicated that the property, which has been idle for some time, will be reopened in the near future. A long tunnel has been driven to the ore bodies, and other surface work has been completed.

M. L. Silcox

The Leviathan mine was operated during World War I, and is said to have an underground sulphur deposit of great extent. In 1948 shipments were made from the property by the Texas Gulf Sulphur Company, New York, with operations conducted under the Siskon Mining Corporation, a subsidiary.

The Dragon Cement Company, successor to the Lawrence Portland Cement Company, has purchased a 74-acre farm in Allen Township, Pa., from the Sunny Slope Farms, Inc. The sale price was reported to have been about $56,000.



J. R. Steelman

Steelman, Brugger Named To Two Highest Posts In Koehring Organization

At the annual meeting of the Koehring Company board of directors, J. R. Steelman was elected president and E. A. Brugger vice-president and general manager.

In his new post, Mr. Steelman succeeds G. E. Long, who will remain as chairman of the board of directors, a position he has held dually with the presidency up to this time. Mr. Steelman also will be elected president of each of Koehring's four subsidiaries.

Steelman's career in the construction industry started in 1929 with the American Bridge Company, in the drafting room and shop. He joined the TVA activity in 1934, devoting his time to construction plant design. In 1936 he became associated with the Koehring organization, serving first as sales manager for the C. S. Johnson Company, a Koehring subsidiary located in Champaign, Ill. He was named president of the Johnson Company in 1941 and Koehring vice-president, sales, in 1943.

Maintaining an active interest in many of the construction industry organizations and activities, Mr. Steelman recently was re-elected president of the Construction Industry Manufacturers Association, the Manufacturers Division of the American Road Builders.

Mr. Brugger is a 35-year veteran with Koehring. While he was serving as assistant purchasing agent, he organized the first Koehring production department, he was named director of purchases in 1930 for Koehring Company and all subsidiaries. He transferred to the Parsons Company, a Koehring subsidiary located in Newton, Ia., in 1938 and served as the firm's president and general manager for a period of ten years. Late in 1948 he returned to Koehring to become vice-president in charge of production.

E. A. Brugger

● To reach a 20-ft. vein of solid gypsum, it is necessary to move 400,000 cu. yd. of overburden at the U. S. Gypsum quarry two miles east of Fort Dodge, Ia. In addition to the natural overburden of 50 ft., old spoil piles 50 ft. high must also be stripped. The overburden is moved back into an old worked-out quarry. In addition to the International TD-24 crawler teamed with a Bucyrus-Erie cable dozer shown in this picture, two other TD 24's with Bucyrus-Erie scrapers were put to work on the job.

1,090,000 Homes Started In 1951—Near Top Record

The year 1951 was the second-best housing year on record, although mortgage-credit controls were in effect throughout the period and the industry came completely under the Controlled Materials Plan in October. A total of 1,090,000 new permanent non-farm dwelling units were started. This was 22 percent or 306,000 units less than the record 1,396,000 started in 1950, according to preliminary estimates of the U. S. Labor Department's Bureau of Labor Statistics.

An estimated 62,000 new units were begun in December, 1951—18 percent less than in November and the lowest monthly level in almost three years.

New homebuilding activity in 1951 was marked by a shift in private building from urban to rural non-farm areas, a steep drop from 1950 in private apartment building, and a sizable increase in the volume of new units begun by public housing authorities.

The 1,019,200 privately owned dwelling units started in 1951 represent a decrease of 25 percent from 1950. In urban places, private homebuilding was 32 percent less than in 1950, while in rural non-farm places the decline was but 14 percent.

Nuisance Status of Dust Changes to Farmers' Aid

Cement dust from the operations of the Kingsport, Tenn., mills of Penn-Dixie Cement Company no longer creates a nuisance in that city but has become a useful by-product of possible profitableness.

The dust is now collected through the the company's newly installed wet process, and farmers of the region have been invited to help themselves to the dust for fertilizer use. University of Tennessee tests have shown the dust to be high in potash content and suitable as fertilizer for that region. Penn-Dixie's Kingsport plant is the first of the company's mills to utilize the dust in this manner.

Washington Brick & Lime Co. Shuts Down for Kiln Repairs

The Washington Brick and Lime Company's Dishman, Wash., plant halted production on December 21, for the first time since 1945 to repair the kilns. Operations were expected to resume on January 7.

Normally the Washington firm shuts down the kilns every year to make the needed repairs. However, the demand for building materials during the last five years held up the annual overhauls, according to Neal Fosseen, company president. Washington Brick and Lime Company officials were particularly anxious to look inside the new, block-long tunnel kiln that went into production last year.

Wyandotte Chemical Corp. Honors Alpena Employees

Six employees of the Alpena, Mich., plant of the Wyandotte Chemical Corporation, Wyandotte, Mich., were honored for their 25 years of service to the Wyandotte firm at the annual Watch Award Banquet.

Executives from Wyandotte who were present included Ford Ballantyne Jr., vice-president and secretary; George H. Baker, director of employee and public relations; Francis B. Griffith, manager, mining and transportation; William T. Orr., operations manager; James C. Lucier, supervising engineer; and Dawson J. Lewis, manager, labor relations.

A.R.B.A. 50th Anniversary Marked at Convention Held in Houston, Tex.

The Golden Anniversary convention of the American Road Builders' Association in the Rice Hotel, Houston, Tex., on January 21-24, set a new high for interest exhibited in an exceptionally fine program. General sessions were held each morning, and afternoons were given over to divisional and technical meetings.

Among the resolutions were two that had been drawn in cooperation with the American Association of State Highway Officials—one that highways be declared an industrial facility in the allocation of steel, and the other supporting the scrap drive through state highways departments. Other resolutions deplored the highway steel shortage and asked for a minimum quarterly allotment of 500,000 tons; supported federal-aid for highways; and appealed from the standard form of government contract which places the final decision in the hands of the contracting office or department. Among the speakers were the Hon. Dennis Chavez, chairman of the U. S. Senate Public Works Committee; the Hon. A. C. Clark, deputy commissioner of the Bureau of Public Roads; and Col. Willard Chevalier of McGraw-Hill Publishing Company, New York, a former president of A.R.B.A.

R. C. Force, First President Of Caterpillar, Dies in West

The death of Raymond Charles Force, first president of Caterpillar Tractor Company and a member of its board of directors, occurred on November 15, 1951, in Oakland, Calif.

Known for his business integrity and sound judgment, Mr. Force laid the foundations for many basic policies which have guided Caterpillar's growth since it was founded in 1925. He served as the company's president until 1930, then became chairman of its executive committee and a member of the board. He served in the latter capacity until his death.

Mr. Force became associated with the track-type tractor business in 1919, when he was named vice-president and secretary-treasurer of the C. L. Best Tractor Company, one of Caterpillar's two predecessor companies.

The Reynolds Mining Corporation, a subsidiary of the Reynolds Metals Company, recently purchased the Poncha Springs fluorspar mine in Colorado. Formerly owned by Fluorspar, Incorporated, the mine is now producing acid-grade fluorspar.

The general offices of the Tennessee Coal, Iron and R.R. Company were recently moved to Fairfield, Ala., where the firm's new office building was erected. The present quarters are located eight miles from Birmingham.

Zinner, Allsman Named To Mines Bureau Posts— Lowell B. Moon Resigns

Two top-flight appointments in the Bureau of Mines have been announced by Secretary of the Interior Oscar L. Chapman. Paul Zinner, formerly regional director of Region V at Minneapolis, was named to the post of chief of the Minerals Division in Washington, succeeding Lowell B. Moon, who has resigned to accept a position in private industry.

At the same time, Seretary Chapman named Paul T. Allsman, who has been with the Denver office of the Bureau, to fill the regional directorship at Minneapolis vacated by Mr. Zinner.

The Minerals Division, which Mr. Zinner will head, is one of the three major operational divisions of the Bureau of Mines at the Washington headquarters. It deals with all phases of the metal and mineral mining industries, employing outstanding scientists, technologists and economists who plan and coordinate the Bureau's research programs for the conservation and development of the Nation's mineral resources.

His successor as regional director in Minneapolis, Paul T. Allsman, will direct all Bureau of Mines activities in the North Central states—Minnesota, Michigan, Wisconsin, North Dakota, South Dakota, Nebraska and Iowa. These activities include all operations of the Region V Mining Division, Metallurgical Division, Fuels Technology Division, Accident Prevention and Health Division, Economics Division, and Administrative Division.

Lowell B. Moon, who resigned as chief of the Minerals Division to accept an assignment with the Kennecott Copper Corporation, was affiliated with the Bureau of Mines from 1939 until his recent resignation.

LeTourneau Mobile "School" Completes 5,000-Mile Tour

A 5,000-mile swing of LeTourneau equipment distributors throughout Western Canada and Northwestern United States was completed recently by the mobile training facilities of the R. G. LeTourneau, Inc., Peoria, Ill., manufacturers of heavy construction and lifting equipment.

The unit consisted of a tractor truck with a 33-ft. van type drop-frame trailer. It carries equipment cutaways, an animated electrical display board, visual aids, and the disassembled 32-ft.-square portable classroom. The display board is used to teach circuits and other aspects of the wiring system used on electric control LeTourneau equipment.

Lehigh Portland Scholarship To Princeton U. Undergrads

The Lehigh Portland Cement Company, Allentown, Pa., has donated a $15,000 undergraduate scholarship fund to Princeton University, Princeton, N. J., which is available to any qualified student enrolled in any one of the university's departments, according to an announcement by Harold W. Dodds, university president. The newly-created fund will be known as the Lehigh Portland Cement Company Scholarship, and will return sufficient annual income to cover the full cost of an undergraduate's tuition for an academic year.

The donor imposed only one condition on its gift, stating that it be "used solely and exclusively for providing tuition for undergraduate students in the engineering or in the liberal arts departments".

Egyptian Cement Industry Enjoys Steady Increase

Cement production in Egypt has increased 300 percent in 23 years, according to the Egyptian Information Bureau. Annually, 3,500 workers produce 1,000,000 tons of cement, which includes three types — portland, supercrete or rapid-hardening, and sulphate-resisting. Raw materials are processed in three factories, the largest producing 700 tons of cement daily.

Portland cement has been produced in Egypt since 1900, but because it could be imported duty free, the industry barely held its own. It was not until 1911, when a second plant was opened in Alexandria, that the Egyptian cement industry was on solid ground.

Natl. Portland Cement Co. Marks 1,000 Days of Safety

Approximately 180 employees of the National Portland Cement Company, Bethlehem, Pa., were honored at a dinner recently in observance of attaining 1,000 days of operation without a lost-time accident. The affair, sponsored by the management, was held at Northampton, Pa.

According to Ivan Krabbe, plant manager, who addressed the group, the 1,000-day record signified a total of 1,123,897 man-hours of safe operation for the entire plant and office, and 224,199 man-hours for the quarry and crushing department.

Last September a safety monument was dedicated at the plant by the Portland Cement association for the firm's 1950 safety record.

Safety awards were presented to all employees, and special honors were accorded to Alex Osbath and William Hauser, employees of the firm throughout its existence.

• Ivan Krabbe, plant manager; Ralph Beitler, safety director; and Arthur Meckes, union officer, at the "safety" dinner.

W. J. Stoffel Honored For 50-Year Record Of Service with Dolese

William J. Stoffel, treasurer and purchasing agent of the Dolese & Shepard Company, Chicago, on March 1, 1952, completed 50 years of service with that company and was honored at a testimonial dinner on that date. He started with the company on March 1, 1902, as a car checker at the old Hawthorne quarry at 31st Street and Cicero Avenue, in Chicago and became successively storekeeper, timekeeper, assistant superintendent, and finally superintendent. When the company moved into its downtown office at 111 W. Washington Street in 1929, he went there as treasurer.

William J. Stoffel

Mr. Stoffel was born in 1885 on Dolese & Shepard property, then known as Smiths Row, and now lives in Riverside, a Chicago suburb not far from the company's huge plant at McCook, Ill. He has been active for many years in the affairs of the National Crushed Stone Association and its former affiliate, the Agricultural Limestone Institute, having held important offices in both.

Kaiser's Bauxite Holdings To Yield 1,000,000 Tons Yearly

At Kingston, Jamaica, Ralph E. Knight, vice-president of the Kaiser Bauxite Company, stated recently that the concern plans to ship 1,000,000 tons of processed bauxite a year to the United States to supply the aluminum industry. Kaiser is presently developing its property holdings in Centre Island.

At the same time company officials announced a plan to double the size of the New Orleans aluminum reduction plant. Capacity of these facilities, scheduled to begin production at once, will be raised to 400,000,000 lb. a year to permit it to take all shipments of bauxite from Jamaica.

Selling, Regulations and Outlook Feature 33rd Meeting of A.E.D.

By E. E. GREEN

The business sessions of the 33rd annual meeting of the Associated Equipment Distributors highlighted the major problems confronting business men today. The meetings, other than those dealing with association reports and business, covered selling and allied problems facing the equipment distributor; government regulations, both direct and indirect; and the outlook for business in the coming year.

The meeting, which was held January 27 through 31 at the Conrad Hilton Hotel, Chicago, Ill., was attended by more than 2,600 members from the United States and Canada. This was the largest attendance in the association's history. The program for the five-day meeting provided for entertainment, and for an opportunity to become better acquainted with other distributors, manufacturers, and to inspect advertising and other promotional material. A special program of events was arranged for the ladies.

The election of officers was held on Wednesday with the following results: Harry J. Hush, Griffin Equipment Company, New York, N. Y., president, succeeding R. L. Arnold, Arnold Machinery Company, Salt Lake City, Utah; S. J. Oechsle, Metalweld, Inc., Philadelphia, Pa., executive vice-president; G. W. Gagel, Machinery and Supplies Company, Kansas City, Mo., Frank Skidmore, Contractors' Machinery and Supply Company, Albuquerque, N. M., and J. G. G. Morgan, Vancouver Equipment Corporation, Vancouver, B. C., Canada, vice-presidents; E. J. Crosby, Hedge and Mattheis, Boston, Mass., treasurer.

The first business session on Monday, January 28, opened with a talk by R. L. Arnold, retiring president, who reviewed the work of the association during his year of office and pointed out some of the major projects for the future.

Following Mr. Arnold on the program were reports given by E. J. Crosby, treasurer, P. D. Hermann, executive secretary, and J. R. Randle, field secretary.

During this first business session, the association went on record as recommending that CPR 105, *Used Industrial and Construction and Related Equipment*, enacted late last year without consultation with the construction machinery industry, be revised to coincide more nearly with the standard practices in the industry.

Three additional resolutions were also passed at the meeting. The first was directed at both manufacturers and the NPA, asking for balanced production of spare parts and new machinery. The second resolution was in opposition to public construction by force account and recommended that the contract method be employed on all construction by the Federal Government and all governmental bodies. In the third resolution, the association asked that the Congress of the United States practice every possible economy in its domestic and foreign expenditures and eliminate all unnecessary programs.

The business session, on Monday afternoon, covered several phases of selling in relation to the distributor. Each of the three speakers presented an important feature of selling that is too often overlooked.

Harry J. Hush, vice-president, Griffin Equipment Corp., New York, N. Y., new A. E. D. president for 1952.

No business sessions were held on Tuesday, as the entire day was given over to individual conferences between manufacturers and distributors.

Wednesday morning opened with the election of officers, after which Milton Rosen, past-president of the American Public Works Association and Commissioner of Public Works of St. Paul, Minn., addressed the group. He brought attention to the highway crisis that is rapidly developing in this country with an address entitled, *What's Being Done About the Threat to Highway Transportation?*

Speaking of DPA-NPA Administrator Manly Fleischmann and Defense Mobilizer Charles Wilson, Mr. Rosen said, "From the public pronouncements of these two men, it is apparent that they believe highway modernization and construction are not essential undertakings in the interest of national defense, and that severe curtailment of steel for highway construction is strictly in order."

Two OPS representatives, A. E. Loder and Leo Wasser, and two NPA men, M. B. Garber and C. J. Haring, spent nearly two hours explaining the actions of their respective agencies in answers to questions directed at them.

On the NPA side of the discussion most of the questions revolved around priorities. Mr. Garber, who was making his last public appearance before retiring as director of the Construction Machinery Division, and Mr. Haring, his successor, took the stand that priorities should be de-emphasized by both the manufacturer and the distributor. Priorities, according to the NPA officials, are only safeguards to assure the ultimate delivery of machinery, and do not guarantee faster delivery.

The final business session was held on Thursday morning. In the first address Julian R. Steelman, president of CIMA and president of the Koehring Company, Milwaukee, Wis., said, "The tremendous basic importance of our roads and transport system seemed undebatable. The necessity of rapidly clearing away the backlog of deferred highway improvement and maintenance accumulated from policies enforced during the (last) war seemed to be fundamental to preparedness as well as to a sound domestic economy.

"The first six months after the outbreak of fighting in Korea shook these concepts considerably, and the next six months shattered them completely."

Looking at the over-all picture, Mr. Steelman saw shortages of heavier con-

The newly-elected board of directors assemble for their first meeting of the year.

struction material before the year was up, with a relatively balanced supply of lighter types of equipment. Heavy tractors, for example, would be in short supply, but small crawler and rubber-tired tractors would probably be easy to obtain for civilian use.

One of the difficulties, he said, was that DPA had cut the production of machinery by roughly 75 percent while construction, especially the heavier types, would equal the all-time highs of 1951, with defense building replacing residential construction.

The military plans for the coming year were outlined by Brig. Gentral Arthur W. Pence, assistant Chief of Engineers, military supply and equipment, Corps of Engineers. General Pence predicted a military construction program amounting to about $2,800,000,000 during fiscal 1952, with a slight increase coming in fiscal 1953. This is, the general said, about the same yearly rate of construction undertaken by the Corps of Engineers during World War II. About $165,000,000 worth of new equipment would be needed for Corps ofEngineers projects coming up, and most of this would be bought directly from manufacturers because it would be used for off-shore work. Domestic contracts were being let mostly to contractors who bought their own equipment, and of course, this buying would be done through distributors.

Social activities included an Early Bird's Breakfast and a Welcoming luncheon on Monday, with the president's reception in the evening. Tuesday activities centered around the annual birthday party dinner in the evening. An Installation luncheon for the new officers was the social highlight of Wednesday.

W. P. Heineken to Design Phosphate Plant Equipment

W. P. Heineken, Inc., engineers, New York, N. Y., recently announced that the firm has been awarded a contract by the Shea Chemical Corporation, Columbus, Tenn., for a large-capacity rotary kiln and two dryers for processing phosphate products.

Mr. Heineken, president of the corporation has been engaged in designing and building kilns, dryers, and coolers for the mining, cement, and processing industries for the last 40 years. He is a graduate of the Columbia School of Mines.

American Potash & Chemical Signs Contract with U. M. W.

Employees of the American Potash and Chemical Corporation's Trona, Calif., plant decided to discontinue relationships with the Mine, Mill, and Smelter Workers as their bargaining agent. Their former agent has been replaced by the United Mine Workers.

The company and the United Mine Workers Union announced that they have drawn up an 18-month contract which increases wages 8 cents an hour, with an average of 2 cents more to eliminate plant inequities.

National Gypsum Completes New Mill at Pryor, Oklahoma

Lewis R. Sanderson, president of National Gypsum Company, has announced the completion of the company's new paper mill at Pryor, Okla.

The 125,000-sq. ft. plant turns out paper used in the manufacture of fireproof gypsum board products, including gypsum lath, wallboard, and exterior sheathing.

In order to control stream pollution a "Save-All" unit was installed to clean waste water leaving the plant, it was announced. Paper fiber thus recovered is pumped back into the processing operation.

The Defense Production Administration has set a goal of 8,400,000 tons annually for sulphur production in the U.S. by 1955. This would be an increase of 2,320,000 tons, or 38 percent, over the nation's sulphur output in 1950. The agency said projects have already been scheduled by government and private interests for the proposed expansion.

30 years ago in Pit and Quarry

By WALTER E. TRAUFFER

THE feature of the March, 1922, issue of PIT AND QUARRY was the very complete report of the recent National Sand and Gravel Association convention in New Orleans. The choice of location for this meeting was apparently as popular then as it was when the 35th annual meeting was held there in 1951. The attractions, in addition to convention affairs, were much the same: French table d'hote, the markets and palm trees, roses growing in the parks in February, the harbor trip, etc., especially the "etc."

The late V. O. Johnston ended his 2-year term as president with an enviable record of accomplishment, having devoted a large share of his time to traveling all over the country, building up state and group organizations, assisting in local causes, getting new members for the association, etc. His successor as president was Alec W. Dann, who had already established himself as a champion of the industry in fighting for greater justice in the matter of freight rates before the Interstate Commerce Commission.

The bad news at this convention was the resignation as executive secretary of E. Guy Sutton, who left to re-enter the sand-and-gravel business. In his report Mr. Sutton told of the work that had been done on freight rates and also the drive for membership over the entire country. It was imperative, he said, that the association represent a majority of producers in this business in all areas, instead of being made up primarily of producers in the central states. He also told of the work done in cooperation with the A.S.T.M., the A.C.I., and highway groups, and reported on studies being made on uniform cost accounting, liability insurance, and other matters. Other speakers included Edmund Shaw, then chief engineer of the Allen Cone Company, who described various methods of hydraulic separation, a subject on which he was an outstanding authority.

The report of the convention ended with the following paragraph, "The report of John Prince of Kansas City, treasurer of the assocation, showed an expenditure during the year of about $35,000 as against a budget estimated at $50,000 at the begining of the year. Mr. Prince was re-elected."

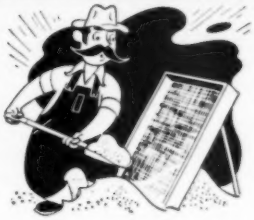
Another convention reported in that issue was the joint meeting of Illinois and Wisconsin producers held in Milwaukee on February 24, 1922. The Wisconsin Mineral Aggregate Association, held its regular monthly meeting in the morning, and was joined by members of the Illinois Concrete Aggregate Association, in the afternoon. Subjects discussed included cost accounting, credits and discounts, cleanness of aggregates, freight rates, wages and hours, uniform contract forms, verbal *vs.* written contracts, etc.

A feature article told of the safety promotional work being done by the U. S. Bureau of Mines. Advice on quarry blasting was contained in a paper which had been presented before the National Crushed Stone Association, by N. S. Greensfelder of the Hercules Powder Company.

This issue contained a number of excellent plant operating articles including the following: the river gravel plant of the Cairo Sand & Gravel Company, Cairo, Ill.; the phosphate rock plant of the Tennessee Agricultural Chemical Corporation at Centerville, Tenn.; the agricultural limestone plant of the National Basic Fertilizer Company at Paint Rock, Ala.; and the crushed stone plant of the Bromide Crushed Rock Company at Bromide, Okla. There was also a detailed description of the new 5,000-bbl. cement plant being built at Signal Mountain, Tenn., by the Signal Mountain Portland Cement Company and the events leading up to the decision to build a plant there. John L. Senior was president of this company.

Also in the news was the Bath Portland Cement Company of Bath, Pa., which was taking bids for the erection of a 4,000-bbl. plant at Sandt's Eddy, Pa. The Patton Cement Plaster Company, Rotan, Tex., was reported to have broken ground for a cement plant at that location. The New England Lime Company, Danbury, Conn., had let contracts for the erection of new buildings at New Milford, Conn., to replace the plant which had been destroyed by fire.

Screenings



by William M. Avery

A COUPLE of bright lads on the staff of Cornell University's engineering faculty claim to have developed a method of making gravel out of mud, inexpensive chemicals and sulphite liquor. Seems this revoltin' brew is messed around in a briquetting machine and molded into pieces which look like over-sized dog biscuits. The latter are crushed and screened to produce the "gravel."

We suppose that some areas have a good deal more mud than gravel, but we weren't aware that the situation had grown quite as serious as the gentlemen from Cornell appear to believe. Of course, there is always a chance that their purpose was merely to provide a material with some sting in it for mud-slinging political campaigns.

So's The Pun

AHEN-FRUIT tycoon of Fort Lauderdale is suing the owner of a nearby quarry for $50,000 on the grounds that blasting operations

frightened his chickens out of laying eggs. Blasting has been made the scapegoat for some pretty far-fetched phenomena, but this is really too fowl for words.

She Comes Later

WE have just learned that the State of Israel will name its new cement plant "Shimshon"—the Hebrew name of the Biblical hero, Samson. The sizable plant is being constructed on what is believed to be the ancient site of Samson's birthplace. None of the publicity we've seen so far contains even a casual reference to Delilah.

Power of Association

AN item from Istanbul, Turkey, discloses that a flask containing blood from the veins of 150 peasants has been mixed with mortar to

make a pedestal for a statue of Ataturk, founder of the Turkish republic. Which reminds us, don't forget to fill out and mail Form 1040 by the 15th of this month!

Relativity

IN awarding $500 to a plaintiff at Woodland, Calif., the other day a Superior Court judge ruled that a "simple trivial offense by a trespassing dog, such as walking on fresh concrete, does not justify killing it".

Look, Judge, we don't want to start a row, but if that's a trivial offense, would you mind just giving us a hint as to what would constitute a *serious* one?

A Fair Yield at That

A NEWSPAPER clipping we received some time ago points out that one cubic foot of cement, plus two cubic feet of sand, plus three cubic feet of coarse aggregate will *not* equal six cubic feet of concrete. "The sand and cement," it goes on to say, "will fill voids in the coarse material so that only about eight cubic feet of concrete will result."

It's a mighty disappointing transaction, but if that's the best that can be done, we'll take it.

Almost Unbelievable

REPORTING on the first public showing of Chain Belt's new super-whopper truck mixers, the St. Louis *Post Dispatch* explains that "machines now used carry 3 to 4½ cubic feet of mix, but the new ones will handle 5½ or 7 cubic feet as legal loads."

Any day now, we suppose, somebody will come along and invent one that'll lug a whole cubic yard at one crack.

That Stone Again

THE Blarney Stone has bounced back into the news momentarily as a result of an increase in the kissing fee from one shilling (14 cents) to one shilling six pence (21 cents). This step was probably taken on the sound premise that anyone nutty enough to hang by his heels down a sheer wall in order to neck with a chunk of limestone, wouldn't under any circumstances know the difference between a shilling and a ten-pound note.

This reminds us that some reticent character with lots of time on his hands has just written (and had published) a 346-page book entirely devoted to the history of the Blarney Stone. In our day we've derived a lot of quiet pleasure from not reading a lot of books, but something tells us that not reading this little opus will yield far more satisfaction than all our previous omissions put together.

Any Questions?

IT seems like a fairly remote contingency, but just in case one of our readers should some day find himself operating a railroad in a remote section of India, where a certain religious sect swipes right-of-way milestones like mad and enshrines them in their temples, we know just how the problems should be handled. You just smear the milestones with sacred vermilion which Hindoos dare not touch. Satisfaction guaranteed or the price of your subscription will be cheerfully refunded.

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Wartime Nevada Brucite Plant Now Producing Dead-Burned Magnesite

another ON THE SPOT report

By Harry F. Utley

In the early stages of World War II before the United States became a belligerent, metallic magnesium came into prominence as a strategic material of the utmost importance. To meet a critically short supply two plants, each complimentary to the other, were miraculously to rise on desert waste lands in Nevada. Out of sands and cactus, within the incredibly short period of eleven months, operating properties with newly-created utilities and towns sprang into production to provide the largest single source of magnesium metal ever developed.

This project was conceived early in 1941 by Basic Refractories, Incorporated, of Cleveland, O., which held claims to vast deposits of magnesite at Gabbs, situated in the Paradise Mountains of west central Nevada. Here were provided extensive facilities for mining, refining, and calcining the ore source of the metal.

Three hundred and forty miles to the south on a 2,000-acre tract of desert as near Hoover Dam as possible, was located the Henderson metal refining plant, accessible to the essential power source.

The 9½- by 390-ft. all-welded rotary kiln, which was installed by Basic Refractories at Gabbs, Nev., and fired for the first time in December, 1950.

The final cost of the whole proved to be of the order of $150,000,000, which was supplied by the Federal Government through its wartime agency, the Defense Plant Corporation. The undertaking embraced two independent high-voltage power lines run 20 and 25 miles each over the mountains from the Hoover Dam sub-station to the Henderson plant site, a 16-mile 42-in. water main with its pumping station at Lake Mead, a 30 million gallon reservoir, two separate towns, and various supplementary manufacturing units including a large chlorine and caustic soda plant.

To effectuate this vast development Basic Refractories, Incorporated, working with Magnesium Elektron, Limited, an English producer of magnesium metal, organized and staffed a subsidiary, Basic Magnesium, Incorporated, which designed, built and operated both plants. These, within the period of August 29, 1941, to November 15, 1944, produced 166,322,686 pounds of magnesium before the government suspended operations on account of oversupply.

Gabbs in 1941 was a completely isolated spot on the Nevada map. It lacked any adequate water, power, rail, highway, and housing facilities; but it did possess staggering amounts of the necessary magnesite ore tucked

A general view of the Basic plant at Gabbs, with stockpiles and the tunnel reclaiming system in the foreground. The five raw material storage silos are at the left, and the kiln and finished material silos are in the right background.

away in the folds of its hills. By paving links in U. S. Highway 95, and by the use of large covered hopper-type truck trailers, the Gabbs mining and refining and the Henderson reduction plants, both made ready concurrently, were effectively linked together. Thus when the need for magnesium diminished and the reduction plant closed in 1944, activity was likewise halted at Gabbs.

For nearly five years the plant at Gabbs remained idle, although Basic Refractories continued, as it had done continuously since 1936, to ship considerable tonnages of crushed brucite from its adjoining ore deposits to its Ohio plants for processing into refractories. Then, after acquiring the property and mining claims that went with it from the War Assets Administration at a cost of approximately $750,000, Basic Refractories in April, 1950, began an extensive conversion for the production of dead-burned magnesite.

The largest item involved in the transformation was a 9½- by 250-ft. Traylor all-welded rotary kiln, which had had slight use in a government-owned aluminum plant at Baton Rouge, La. This kiln, after adding sections to lengthen it to 390 ft. and substituting a new drive mechanism, was installed and fired initially on December 15, 1950. The workmen, and there are now about 180 on the payroll, nearly all reside at the Gabbs townsite which was leased from the U. S. Government.

Characteristic of magnesite deposits, the ore bodies are irregular and intruded, requiring considerable selectivity in their mining. Hence, three separate quarries are presently being worked.

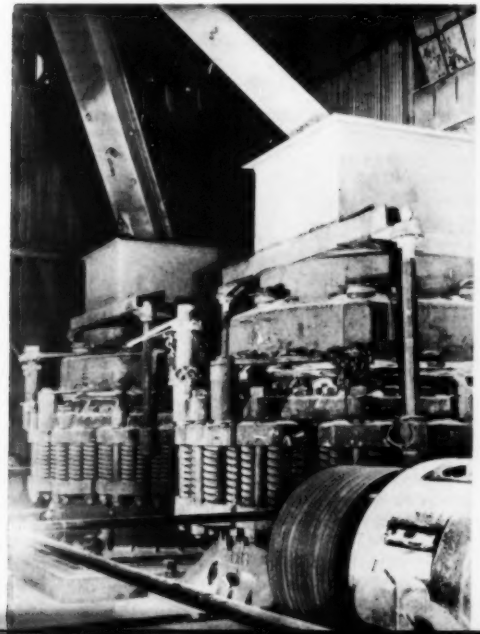
To permit refinement of the ore to the highest purity whenever required, the company has redesigned the froth flotation concentrating plant built to meet metal production specifications. Work on this project was undertaken and completed by Western-Knapp Engineering Company of San Francisco. Considerable equipment formerly used when the Gabbs plant was doing its war job was utilized for this purpose.

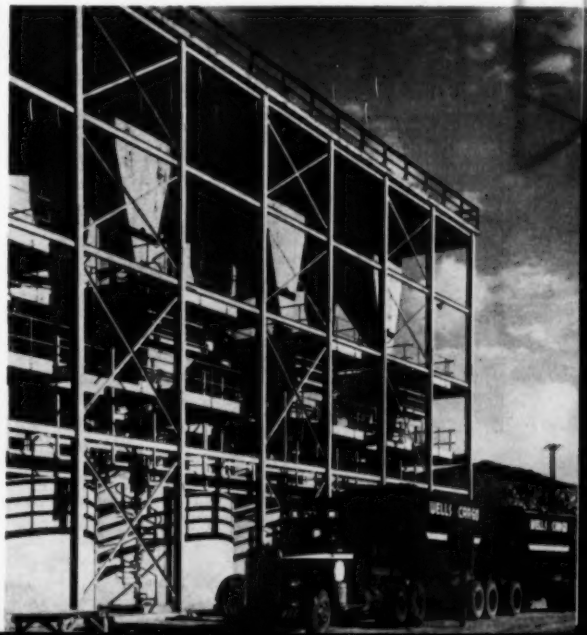
The broken ore is loaded into Euclid 15-cu. yd. end-dump trucks by Bucyrus-Erie 54B and 44B diesel shovels handling 2- and 2½-cu. yd. buckets. The hauls to the primary crusher average about a mile, and the rock is there broken to minus 8 in. by an Allis-Chalmers 36-in. McCully crusher, carried by a 36-in. by 125-ft. belt conveyor and split at the head pulley to a pair of Ty-Rock 5- by 10-ft. double-deck screens. The screens separate the crude material into coarse (minus 8-in. plus 2-in.), medium (minus 2-in. plus ¼-in.), and fine (minus ¼-in.), the three sizes being stored in 100-ton surge bins. The minus ¼-in. ore is partly wasted, the fines being retained only if they meet process specifications.

The coarse ore is further reduced to minus 2½-in. by a Symons 4-ft. shorthead cone crusher, and all materials are conveyed by belt to stockpiles separated according to grades, to be recovered by a tunnel belt. Recovered ore is crushed down to ¾-in. top size as required in a 5½-ft. Symons short head crusher, and elevated for storage in five 120-ton silos which feed the 6½-ft. by 10-ft. Allis Chalmers ball mills. Four 60-ton silos alongside are for the storage of additives, which generally consist of iron ore obtained locally, serpentine shipped in from California, and chrome ore obtained from California or imported. Proportioning is done by a battery of ten Hardinge constant-

Below, left: The 4-ft. and 5½-ft. short head cone crushers which reduce the ore ahead of the ball mills.

Below, right: The special trucks with two trailers alongside the weigh hoppers which load out finished materials from the storage silos.





weight feeders and the water requirement of 300,000 gallons per day comes via a 10-in. pipeline from wells in the Gabbs Valley about ½-mile distant. The mills are closed-circuited with a pair of Allis-Chalmers Utah-type single-deck eight-mesh screens, and the slurry is pumped to a group of six tanks for control and storage and thence to two 20-ft. by 12-ft. feed tanks. The raw materials are subject to continuous laboratory analysis here, as well as at numerous points along the line, starting at the drilling operations and in the quarries themselves.

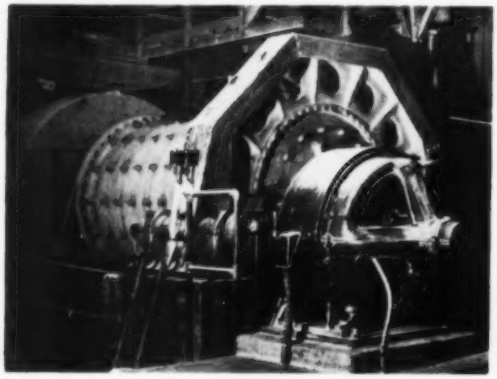
The kiln is fed by a Stephens-Adamson ferris-wheel feeder, supplied by Wilfley pumps at the slurry tanks. It is fired with 13,000-B.t.u. Utah bituminous coal prepared for direct firing in a Raymond bowl-mill. The hot zone lining consists of magnesia brick made by Basic Refractories. The intermediate zone lining consits of 70 percent alumina brick. The material clinkers in the hot zone at about 3,200 deg. F. The kiln, sloped ½-in. per foot, turns at an average speed of 75 r.p.h. The drive is by direct current motor equipped with Ward-Leonard control, with the usual gasoline engine for stand-by service.

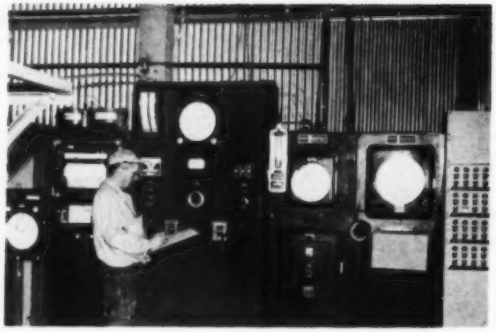
Basic Refractories produces a variety of types of granular magnesia refractories at Gabbs for use in building, maintaining, and repairing basic open-hearth and electric furnaces, so there is variance in the raw material compositions fed to the kiln. In general, however, the slurry is corrected with the proper amount of finely-ground additives, iron oxide being the important dead-burning agent.

The dead-burned material is cooled in a Fuller No. 629 grate-type air-quenching cooler, fitted with an integral hammermill to break up any lumps. Top size of the product seldom exceeds 1½ in. The cooled clinker is elevated to bins which feed a pair of Ty-Rock single-deck screens, any plus ⅜-in. product being returned for crushing in a closed-circuited Symons 3-ft. short head cone. The finished granules are stored in 10,000-ton capacity concrete silos and weighed out into trucks which deliver to the railroad at Luning, Nev., on the Nevada branch of the S. P., 33 miles away.

In addition to rehabilitating the flotation facilities for intermittent use on magnesite, the company earlier in 1951 placed a 50 t.p.h. heavy media separation plant in operation for the treatment of brucite. This unit, a No. 3M Wemco Mobil-Mill equipped with a 14-ft. diameter Wemco cone separator and the necessary thickeners and agitator tanks, has been operating on newly-mined brucitic material which was too low grade to mine before the heavy media plant was installed and on

(*Continued on page* 104)





Top, left: One of the 6½- by 10-ft. ball mills which prepare the slurry.

Top, right: Workmen using a kiln gun to shoot out rings in the kiln.

Bottom, left: The central control board for the kiln and other important plant equipment.

Bottom, right: Quality control is extremely important in producing the magnesite refractories and testing is carried on regularly at numerous points in the flow sheet. This is only one small portion of the large, well-equipped plant laboratory.

Canadian Institute of Mining and Metallurgy Meets in Ottawa

THE 54th convention of the Canadian Institute of Mining and Metallurgy was held under the auspices of the Ottawa Branch in the Chateau Laurier Hotel, Ottawa, Ontario, on January 21, 22, and 23, 1952. Upwards of 1,400 registered delegates were in attendance. President Oliver B. Hopkins presided. The six divisions of the Institute—coal, geology, industrial minerals, metallurgy, metal mining, and petroleum and natural gas—held business and technical sessions, all of which were very well attended.

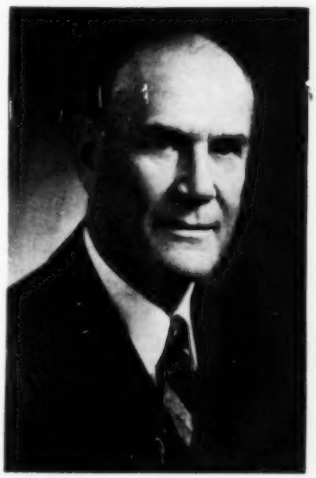
The theme of the meeting was *Canada's Place in the Mineral World*. Among those addressing the convention were the former Governor General of Canada, Field Marshall Viscount Alexander, the Hon. G. A. Prudham, minister of mines and technical surveys, Ottawa; M. W. Mackenzie, deputy minister of defense production, Ottawa; Dr. Charlotte Whitton, mayor of Ottawa; and Elmer W. Pehrson, regional director of foreign minerals, U. S. Bureau of Mines, Washington. More than 60 technical papers were presented.

At the conclusion of the meeting the election of Dr. D. F. Kidd, geologist and consulting engineer of Vancouver, as incoming president was announced. At the business meeting of the Industrial Minerals Division, Chairman W. G. Cowie of Winnipeg and Secretary T. H. Janes of Ottawa were re-elected for 1952-53.

Speaker after speaker pointed out the giant strides that Canada is taking in mineral development and what this means to the free world. Max Mackenzie, deputy minister of defense production, stated that the development of natural resources is as much a part of the defense effort as is the building up of actual military strength. He indicated that the spending of $3,000,000,000 is already planned for projects for completion in 1955 or before to increase the supply of minerals, electric power, chemicals, oil and gas, and pulp and paper. This, he said, is an ambitious program for Canada, but one that is well designed and well in hand, and one that will make a significant contribution, through increased production, to the needs of a material-hungry world.

One of the features of the meeting was the symposium on sulphur sponsored by the Industrial Minerals Division. This symposium covered Canada's position as an actual and potential producer of sulphur and sulphur compounds. The first paper by T. H. Janes, engineer, Industrial Minerals Division, Mines Branch, Ottawa, entitled, *Sulphur and Pyrites in Canada*, reviewed the whole situation. In 1950, said Mr. Janes, the apparent Canadian sulphur consumption was about 600,000 tons, of which about 390,000 tons was imported, mainly from the United States. From pyrite and smelter gases Canada produced the equivalent of over 300,000 tons of sulphur and exported the equivalent of 111,000 tons, mostly in the form of pyrite.

In addition to abundant reserves of pyrite and a large supply of smelter gas of suitable concentration of SO_2 for the recovery of sulphur compound, Canada possesses large reserves of natural gas having a hydrogen sulphide content of from 2 to 8 percent. The huge deposits of bituminous sands in Northern Alberta are a great potential source of sulphur, and there are also virtually inexhaustible deposits of anhydrite, particularly in Nova Scotia and New Brunswick, which are potential sources of sulphur when conditions warrant.



Oliver B. Hopkins, former president of the Institute.

L. T. Munn, manager, Chemical Products Department, Shell Oil Company of Canada Limited, Montreal, in his paper, *The Production of Elemental Sulphur From Jumping Pound Natural Gas*, described Canada's newest sulphur-producing plant, which went into production on January 18 of this year. This plant extracts sulphur from the sour natural gas of the Jumping Pound gas field 20 miles northeast of Calgary. The anticipated production is 10,000 long tons per year of sulphur which is better than 99.9 percent pure. The gas comes from five wells, each producing 5,000,000 cu. ft. per day of gas that contains 3.5 percent of hydrogen sulphide. The hydrogen sulphide must be removed from the gas before it is piped to the Calgary area for industrial and domestic use. This is accomplished by passing the gas through a mono-ethanolamine scrubber and subsequently heating the charged mono-ethanolamine to release the hydrogen sulphide which is passed on to the sulphur plant. The recovery is 90 to 95 percent of the theoretical sulphur available. Undoubtedly, said Mr. Munn, more sulphur plants will be built in the gas fields of Western Canada in the future.

Dr. D. F. Kidd, president-elect of C.I.M.M.

Sulphuric Acid and Liquid Sulphur Dioxide Manufacture From Smelter Gas at Copper Cliff, On-

tario, was the title of a paper by R. W. Allgood, manager, Copper Cliff Works, Chemicals Department, Canadian Industries Limited. This paper told the story of how three Canadian companies co-operated to develop the commercial production of liquid sulphur dioxide which will help ease the shortage of elemental sulphur now imported from the United States. The plant is expected to be in operation by the end of 1952 and will produce about 90,000 tons of liquid sulphur dioxide per year, equivalent to 45,000 tons of elemental sulphur from the gases, produced by International Nickel Company's Copper Cliff smelter.

Production of sulphuric acid from smelter gas is also being increased 60 percent. The liquid sulphur dioxide is being made by Canadian Industries Limited from a gas containing 75 percent or more of sulphur dioxide resulting from the new flash-smelting process of the International Nickel Company, in which oxygen is used instead of air to treat the ore concentrates. The costly concentration step necessary with more dilute gas is thus eliminated. The economic success of the liquid sulphur dioxide plant, Dr. Allgood said, depends in large measure on the close integration between the sulphuric acid plant and the new plant, because strong sulphuric acid is needed to dry the strong gas and allows disposal of the tail gas. The liquid sulphur dioxide will be used by sulphite pulp mills in Ontario and Quebec. The Abitibi Power and Paper Company co-operated in the preliminary work and proved that the liquid sulphur dioxide can readily be used in sulphite mills.

M. S. Badollet of the Research Center, Johns-Manville Corporation, Manville, N. J., presented another of the series of papers he has been giving on asbestos before the Industrial Minerals Division. The current paper was entitled *Asbestos Floats.* Mr. Badollet defined floats as "blends of airborne particles of fibrous asbestos and dusts produced during the milling stages, and collected by Cottrell precipitators, dust sheds, or baghouses". The various grades on the market contain dust and asbestos particles ranging from two or three microns up to ¼ inch in length.

Floats are used in such industrial products as adhesives, caulking compounds, automobile underbody coatings, dry-wall joint filler, lubricate-greases, asphalt and cold-water paints, plastics, molding powders, welding rod coatings, insecticides, radiator sealing compounds, acoustical plasters, cements, etc. In order to be of use for these various products, the floats must be graded in the laboratory and pass stringent tests so that they can be blended into a uniform product to meet the requirements of the trade. Among the physical properties determined are the *loose density,* measured by slowly sifting the floats into a container of known dimensions; the *amount of grit,* found by a wet-washing method; the *oil adsorptive capacity;* the *surface area,* ascertained by the air permeability method by means of the Bowen apparatus; *density at 2,000 and 3,000 lb. per square inch; compressibility at 2,000 and 3,000 lb. per square inch; springback* after release of these pressures; *ionizable salts,* ascertained by leaching out the water-soluble material and determining its conductivity; *water-soluble content,* found by letting a sample of floats stand in distilled water for 63 hours; and *magnetic rating,* by measuring the amount of magnetite present by means of an adaptation of the Mapes test.

In his paper, *Water—An Industrial Raw Material,* J. F. J. Thomas, chemical engineer Industrial Minerals Division, Mines Branch, Ottawa, presented data showing the importance of water to industry in general and described the work being done in connection with the survey of the quality of water available to industry throughout Canada. In this survey the term "quality" refers primarily to the amount and nature of various chemical materials dissolved or suspended in the water. To industrial users these are usually more significant than potability.

Mr. Thomas stated that there is still amazing ignorance regarding the importance of water as an industrial mineral, or raw material, but more and more industrialists are realizing that it is often better economy to locate a plant where water of satisfactory quality is available rather than to rely upon methods of treating unsatisfactory water or to purchase higher grades of other raw materials in order that their product may meet specifications.

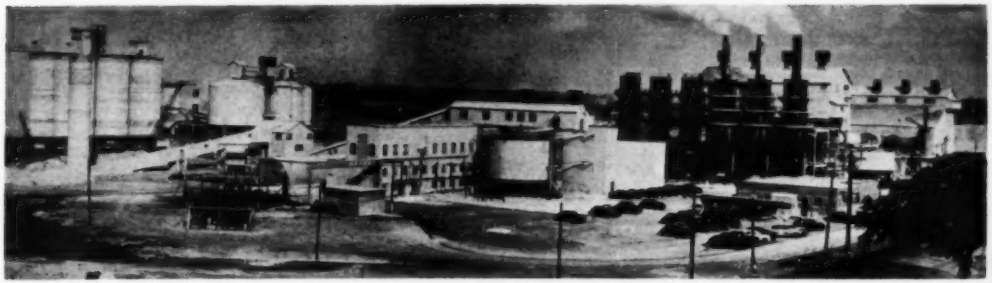
The importance of water to industry was shown by means of a table listing the estimated quantities of water consumed by various Canadian industries. These quantities ranged from 25,900,000 gallons per year for the leather industry to 391,519,000,000 gallons per year for the pulp and paper industry. The Portland cement industry in Canada uses an estimated 10,753,000,000 gallons per year. For all purposes Canada uses 13,500,000,000 gallons daily.

Factors determining the quality of water are the pH, color, and the presence of dissolved and suspended material. Carbonates, bicarbonates, sulphates, and chlorides of calcium and magnesium are the most common troublemakers, said Mr. Thomas. Alkali salts are also found in undesirable quantity in waters from the prairies. In late years the amount of dissolved silica or colloidal silica present has been found to be a very important matter to some industries.

In the present survey of Canadian water resources, a major watershed or drainage basin is studied as completely as facilities will permit for a period of one year. Thirty or more sampling stations are set up, and samples are taken—in some places daily, and in others monthly, extra samples being taken at periods of high and low water. During the summer months the area is traveled with a mobile laboratory, and the sampling is checked. In this way a record is obtained of the quality of the water in the several seasons and at various rates of flow. However, while there is in most rivers a relationship between flow and water quality, studies so far have indicated that the relationship must be studied for a much longer period than one year before it can be predicted what the quality will be when the flow is so many cubic feet per second.

What the author believed to be a new method of interpreting geological structures in unmetamorphosed sedimentary rocks was described by A. S. Dawson, field manager, Western Potash Corporation Limited in a paper entitled *The Use of Ceramic Tests in the Correlation of Strata.* The tests were the determining of the pyrometric cone equivalent (P.C.E.), and finding the bloating characteristics of shale beds, in the belief that these ceramic properties are diagnostic for certain beds and that they might be used in conjunction with the established methods of stratigraphic correlation. The samples were collected by Mr. Dawson, and the tests were made in the ceramic laboratories of the Mines Branch, Ottawa. It was found that the P.C.E. values and the bloating characteristics corresponded closely for strata that were definitely known to be at the same geological horizon, and generally differed for strata of different horizons. It was thought, therefore, that the method would aid in the correlation of coal seams, sandstone beds or other structures associated with them and that contacts between marine and non-marine shales might be located.

Ideal Converts Wartime Alumina Plant At Baton Rouge to Cement Production



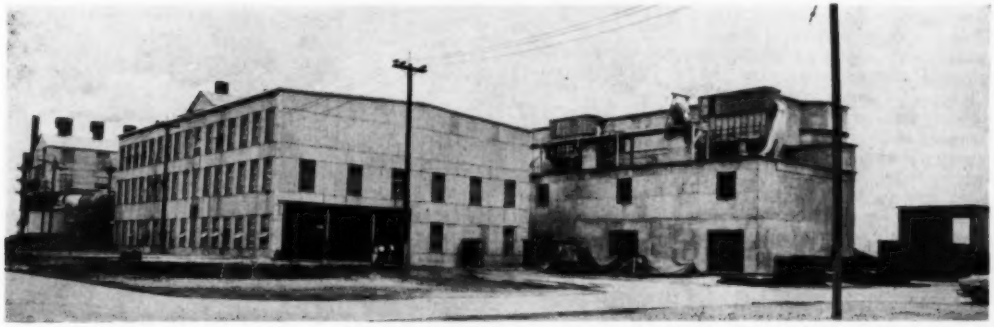
Ideal's New Baton Rouge plant, converted from a wartime alumina plant by adding new equipment. Annual capacity, 1,500,000 bbl.

WITH the recent completion of its new cement plant at Baton Rouge, La., and its new storage and packing plant at New Orleans, the Ideal Cement Company has brought nearer completion its extensive postwar expansion and improvement program. The new plant, a wet-process operation with a capacity of 1,500,000 bbl. annually, went into operation late in September, 1951. A few months earlier the New Orleans terminal had been completed. This expansion program included the conversion of a wartime alumina plant at Mobile, Ala., to cement and lime production in 1946 (see PIT AND QUARRY, July, 1947, pp. 90-95, for a complete description); the construction of "twin" cement plants at Portland, Colo., and Devil's Slide, Utah, in 1948 to supplement the existing plants there (see PIT AND QUARRY, January, 1949, pp. 102-116); and the expansion and improvement of its plants at Okay, Ark., Boettcher, Colo., Trident, Mont., Superior, Neb., Ada, Okla. (see PIT AND QUARRY, September, 1951, pp. 72-74), and Houston, Tex.

This program was carried out at a cost of about $32,000,000 since 1945 and added about 11,000,000 bbl. to the company's annual productive capacity, which is now about 19,000,000 bbl. A fourth kiln and cooler are now being installed at the Baton Rouge plant which will increase its capacity 1,700 bbl. to 6,200 bbl. daily. Ideal also recently effected an exchange of stock with the Pacific Portland Cement Company which brought into its chain additional plants at Redwood City and San Juan Bautista, Calif., and Gold Hill, Ore., with a combined capacity of 4,060,000 bbl. annually. Pacific now operates as a subsidiary of Ideal. Plans are under way to expand the Redwood City plant at a cost of $3,500,000 and the Gold Hill plant at a cost of $3,000,000. When these programs are completed, the Ideal system should have a total capacity of well over 24,000,000 bbl. annually.

The new Baton Rouge plant is located on a bluff overlooking the Mississippi River seven miles northwest of that city. It is a wet process mill using as raw materials oyster shell from Lake Pontchar-

New terminal at New Orleans serves Baton Rouge and Mobile plants



The Baton rouge plant (another view), showing the new monolithic concrete finish grinding room, before completion, in the foreground.

train and clay from its own deposit.

This plant was originally built by the Reconstruction Finance Corporation for the sintering of bauxite ore to be used in the production of aluminum. The equipment was purchased in November, 1950, from the General Services Administration, and C. K. Boettcher, president of Ideal Cement Company at Denver, Colo., immediately announced the building of a modern cement plant at this site. Work was started January, 1951, for the conversion of the sinter plant to the production of portland cement.

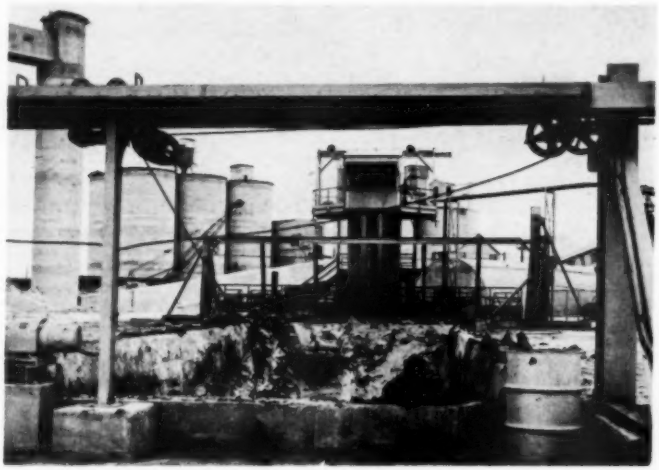
The major units of a cement plant were already installed in the proper flow sheet, consisting of two hammer mills, three 7-by 40-ft. raw mills, eight slurry tanks, three 9½-by 250-ft. kilns and coolers, three 8- by 16-ft. clinker mills, and all auxiliary equipment including buildings, trackage, paving, fencing, etc. The new units required to produce and ship portland cement were oyster shell unloading facilities and new cement storage silos and packhouse. In addition, a plant office, a chemical laboratory and a machine shop were started.

Later, however, it was decided to expand the plant by the addition of another kiln and cooler, which are now being installed and should be in operation in May or June of this year. The plant will then have a capacity of 6,200 barrels per day.

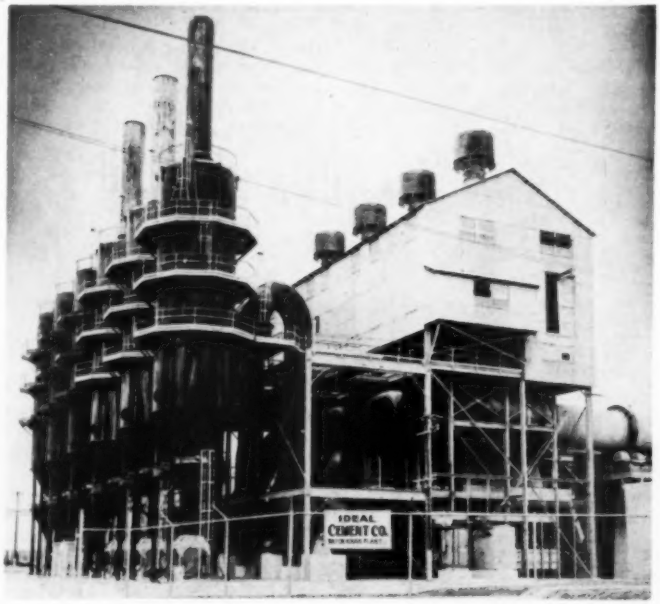
The local railroads serving the plant are the Louisiana and Arkansas Railroad, the Illinois-Central Railroad, and the Missouri Pacific Railroad, which make connections throughout the South. Power is supplied by the Gulf States Utilities Company. Natural gas is used for fuel and is supplied by the Interstate Natural Gas Company.

Also included in Ideal's expansion program better to serve its customers in the South was the building of a cement terminal on the New Orleans Industrial Canal. These facilities consist of cement storage bins and a packing house having a storage capacity of 125,000 barrels. Cement is shipped from this terminal to customers in New Orleans and other points within economical range in bulk or in packages by either railroad or by water. The cement for the terminal is transported by the company's self-unloading, 7,500-bbl. barges from Ideal plants at Mobile and Baton Rouge.

Extensive waterfront facilities are now being built by the W. Horace Williams Company of New Orleans for unloading oyster shell from barges and for loading finished cement to barges for river and Gulf service. The oyster shell can be unloaded at the rate of 300 cu. yd. per hour and the finished cement can be loaded at the rate of 1,000 bbl. per hour. The 2,500-cu. yd. shell barges will be moored to towers parallel to the river and the shell will be unloaded with the use of a Washington Iron Works hammerhead crane. The 95-ft. radius boom will have a 360-degree rotation and will use a 6-cu. yd. Owens clamshell bucket. The bucket will discharge to a surge hopper which in turn will feed through a 30- by 42-



A view of the clay mixing sump and the wash mill, showing the drag scraper in operation. At the left is one of the five towers of the shell storage system and the reclaiming conveyor tunnel.



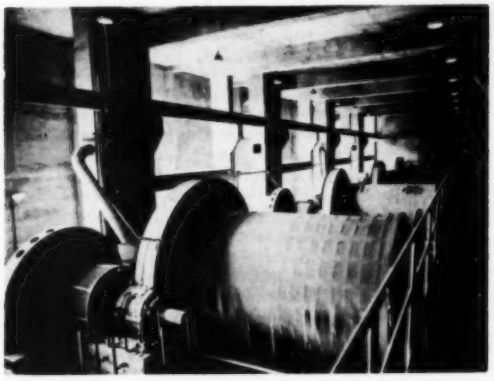
The individual 15-ft. by 77-ft. 9-in. scrubbers for cleaning waste kiln gases. Three of the five scrubbers are in use, and each is preceded by a draft fan.

in. vibrating Jeffrey panfeeder and a 30-in. Continental Gin belt conveyor to storage. The conveyor gallery perpendicular to the river towers will be supported by five concrete towers 80 ft. in height and on 80-ft. centers. The total length of the belt is 960 ft. The discharge of the shell from the belt will be accomplished by a 30-in. automatic Continental Gin tripper. The open storage area has a capacity of 100,000 cu. yd. of oyster shell.

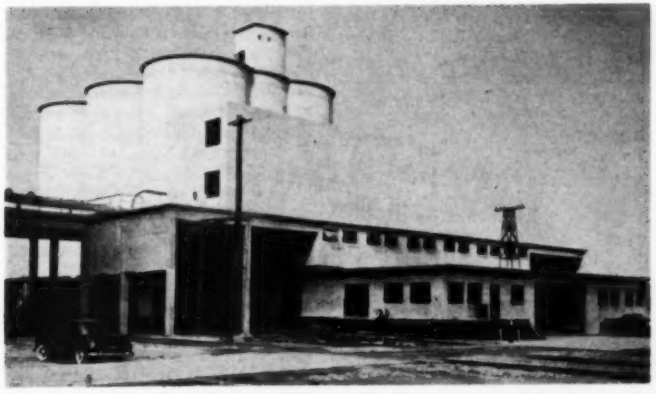
For plant processing, the shell is brought through a recovery tunnel from nine delivery points on a Continental Gin conveyor belt having a capacity of 125 tons per hour. This belt delivers the shell to two No. 5040 Dixie Mogul steel frame hammer mills. The crushed shell from these mills is delivered by a 24-in. conveyor belt to storage bins ahead of the 7- by 40-ft. F. L. Smidth raw mills.

The clay is now trucked to the plant in 7-cu. yd. Diamond T trucks from the company's deposit in West Baton Rouge. However, the waterfront facilities are so designed that at some future date, with the minimum of additional facilities, clay can be brought in by barge and unloaded with the present hammerhead crane. When delivered at the plant, the clay is dumped into a soaking pit, from which it is fed to a Duplex (two 24-ft. diameter) wash mill with a Sauerman scraper using a 2-cu. yd. bucket. From the wash mill the clay is then pumped to a 40-ft. diameter by 25-ft. high storage tank by a 6-in. Wilfley pump. A Dorr agitator is installed in the clay tank for proper agitation, and the air for agitation is furnished by a C-60 Fuller compressor.

The raw material is ground by three 7- by 40-ft. F. L. Smidth compartment mills driven with Electric Machinery 700-hp. synchronous motors. From storage bins the crushed shell is fed to the mills with Jeffrey vibrating feeders. From the clay storage tank the clay is fed to three Traylor ferris wheel feeders which in turn feed the respective mills. A steady head water tank is used for maintaining an even flow of water to control the moisture in the mill stream.



An interior view of the new finish grinding department, with three 8- by 16-ft. primary mills and the 9- by 16-ft. finish mill in the foreground.



The packing building and the 125,000-bbl. cement storage nearing completion.

The mill stream is next delivered by 6-in. Wilfley pumps to three 40-ft. diameter by 25-ft. high tanks for mixing and blending. From here the slurry is pumped to any one of four 40- by 15-ft. high kiln feed tanks. All tanks are equipped with Dorr agitators, and the transfer pumps are all 8-in. Wilfley units. The air used in agitation is from three C-150 Fuller compressors.

At the present time three 9-ft. 6-in. by 250-ft. Traylor kilns with three 4-ft. 6-in. by 60-ft. Allis-Chalmers coolers are in operation, producing 1,500 bbl. each per day. A 10- by 25-ft. Traylor kiln and a 4-ft. 6-in. by 60-ft. Allis-Chalmers cooler are now being installed which will have an estimated capacity of 1,700 bbl. per day.

The kilns are all installed on four supports and riding rings at a ½-in. pitch and are operating at 60 r. p. h. Each kiln has a chain installation using approximately 6,000 ft. of ⅝-in. coil chain per kiln.

The exit kiln gases are handled by individual American Blower Company draft fans. Before delivery to atmosphere the exit gases pass through individual wet scrubbers 15 ft. in diameter by 77 ft. 9 in. high.

Each kiln is operated from the firing platform with the aid of a master control panel. Each kiln has the following instruments: a Hays CO_2 recorder and a Hays draft gauge for combustion control and for hood draft and kiln differential, Veeder Root magnetic counters (one for kiln and one for feeder revolution totals), a Weston tachometer indicator for kiln feeder speed indication, a Leeds and Northrup Rayotube for indicating and recording the clinker burning zone temperatures, and a Speedomax recorder with the use of alumel thermocouple for indicating and recording the kiln exit gases. Natural gas is used for kiln fuel.

The clinker discharges from the coolers to drag chains (one spare) to two elevators (one spare) to concrete storage bins ahead of the clinker grinding mills.

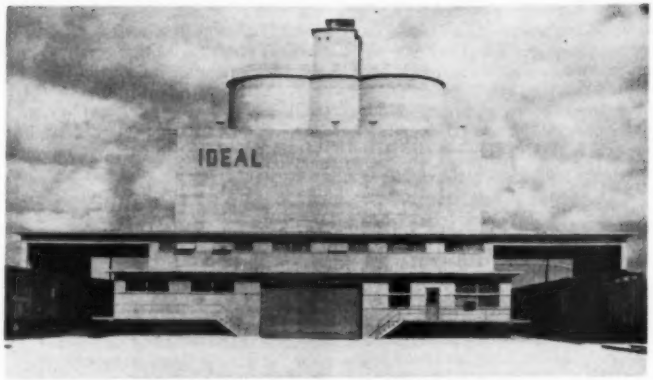
The finished cement is ground in four mills, three 8- by 16-ft. Traylor primary mills and one 9- by 16-ft. Traylor finish mill. The three 8- by 16-ft. Traylor mills are driven by Electric Machinery 450-hp. synchronous motors; clinker and gypsum are fed with individual Merrick-Feedoweights. The 9- by 16-ft. Traylor finishing mill is driven by a General Electric 800-hp. synchronous motor and closed circuited with a 16-ft. Sturtevant separator. The building and machinery are laid

out and installed so that all four mills can be closed-circuited with separators. The finished cement is transported 1,100 ft. to the new storage silos with an 8-in. Fuller-Kinyon pump using compressed air furnished by two C-150 Fuller compressors.

The clinker mill room is built of monolithic concrete and has complete dust control with Norblo automatic-type dust collectors.

Gypsum is received by rail, unloaded into a track hopper and by belt and elevators to delivery to concrete storage bins ahead of the clinker mills.

The six 35- by 75-ft. concrete storage bins with interstices have a total capacity of 125,000 bbl. The three-story concrete packing house has ample storage for bags. The packing is done on the first floor by three 4-tube St. Regis packers, and the packaged cement is conveyed by Flexoveyors to both sides for car loading. In addition to package loading the packhouse is designed for rapid bulk car loading as well as bulk river barge loading. The barge loading cement is pumped at 1,000 bbl. per hour by a 10-in. Fuller-Kinyon pump through a 12-in. line. The compressed air is furnished by three C-250 Fuller compressors. The company now has two Ingalls Iron Works self-unloading barges with a capacity of 7,500 barrels each, and two more are under construction. Also at this time three 5,000-bbl. capacity 35- by 150-ft. St. Louis Shipbuilding and Steel Company contract barges are under construction. The storage bins and packing house are duplicates of the New Orleans Terminal.



The new $500,000 cement packing and distributing plant at New Orleans. Bulk cement is received by barge from Mobile and the new plant at Baton Rouge.

Negotiations for the purchase of the sinter plant equipment and property were handled by company officials: Cris Dobbins, executive vice-president and general manager, and M. O. Matthews, vice-president and general manager of the Southern Division. Construction and operation of the plant was under the direction of Thomas B. Douglas, general superintendent. The conversion engineering was done by Stearns-Roger Manufacturing Company of Denver in collaboration with the Ideal engineering staff under the supervision of George Wiley, general engineer.

The local personnel who so ably supervised the construction and are now supervising the plant's production include D. E. Koch, plant manager; Guy Friday, assistant plant manager; and T. J. Johnson, plant engineer. The chief chemist is Warren Brown. A. L. Moss is superintendent of the terminal at New Orleans.

Basic Refractories, Inc.

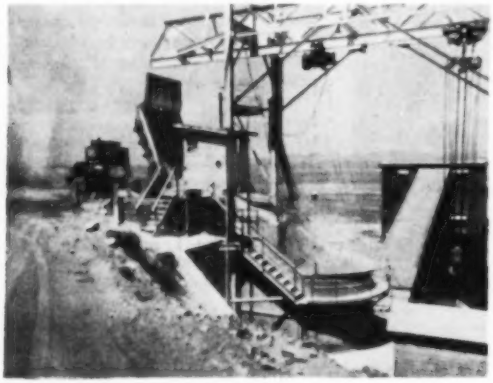
(*From page* 98)

low grade material that had been stock-piled during the period when selective mining and hand sorting had been carried out by Basic Refractories.

The sink fraction from the heavy-media-separation brucite plant is wasted, this float passing to the product bins. Ahead of the Mobil-Mill is a Telsmith jaw-crusher and a Ty-Rock 4- by 10-ft. screen for preparing the feed to the separation cone. This consists of minus 2½-in. plus 3/16-in. material. The minus 3/16-in. screen throughs pass to a Wemco 78-in. by 28½-ft. screw classifier, where everything finer than No. 65-mesh is washed out and the balance stockpiled for possible future treatment.

The loading station at railhead, built as an adjunct to the plant's conversion, includes eight storage silos, each of 175 tons' capacity, which are served by truck delivery from the plant. Carloading is carried out by means of a belt conveyor that gathers from the silos and discharges to elevators which in turn feed the loading spouts.

The new plant at Gabbs has made it possible for the company to introduce a new product "Basic Magnesite," a dead-burned magnesite for installing and repairing open-hearth furnace bottoms and electric and ferro-alloy furnace linings. Perhaps the best known of the granular refractories produced at Gabbs is "Basifrit", a quick-setting dead-burned magnesite likewise used for original installations and the repair of open-hearth furnace bottoms. Shipments are made direct from Luning to the steel mills, although substantial tonnages are consigned to the company's Ohio plant for use in special ramming mixes and refractories designed for application through the B.R.I. pneumatic gun.



One of the 15-cu. yd. end-dump trucks, discharging quarried magnesite to the hopper at the primary crusher.

The Pacific Sand and Gravel Company of Centralia, Wash., recently submitted the low bid of $259,876 for surfacing and paving sections of the Glacier and Douglas highways.

Missouri Limestone Men Hold 7th Annual Meeting

ABOUT 200 members of the Missouri Limestone Producers Association and their friends attended the organization's seventh annual convention in Jefferson City on February 5 and 6. It was the largest attendance at any of the state meetings in Missouri. Interest and enthusiasm ran high through the entire meeting, and the general opinion was that the Missouri association is proving to be one of the most effective groups of its kind in the United States.

The speaker at the banquet, a highlight of the meeting, was Tom Collins, humorist and philosopher of Kansas City. Mr. Collins held the attention of his hearers throughout his address, which combined humor and homespun philosophy and brought enthusiastic applause from all.

His general theme was that the world is not going to the dogs, but rather that there is much hope for all who genuinely want peace on earth and who are willing to let their fellow men make honest dollars. Said Mr. Collins, "You men are to be congratulated for two reasons—first, for taking a worthless material and making something of great service to mankind from it; and second, you can sit down with your competitor at a dinner like this and not knock him into oblivion." He went on to say that this principle of friendly competition must be adopted by many other contemporary groups, especially governments of nations.

Special guests at the annual banquet included about 60 Missouri State Highway Department officials. Among those present were: Commission Chairman Harris D. Rogers, Benton; Commissioners John C. Harlin, Waynesville, and E. L. Clark, Rolla; and Missouri's recently appointed chief engineer, Rex M. Whitton.

Others present included the following: Ed Caldwell, chairman, Missouri P.M.A. Committee; John C. Kendrick, head of the state's conservation materials program; Howard Jackson, assistant state soil conservator; and Robert McClelland, executive secretary, Missouri Soil Districts Commission.

A round table discussion was an important feature of the program. Participants included the following: Fred Harris, chief of supplementary roads; Fred Reagel, materials engineer, highway agency; J. J. Griesemer, Billings; and A. A. Strane, Midwest PreCote Company, Kansas City. Moderator of the discussion was Paul N. Doll, the association's manager. The topic discussed was the use of crushed stone in Missouri's highway and road-building programs.

Tom Collins, Kansas City humorist and philosopher, who addressed those attending the association's banquet.

H. C. Krause, president, Columbia Quarry Company, St. Louis, discussed percentage depletion. He is chairman of the percentage depletion committee of the National Agricultural Limestone Institute. Mr. Krause pointed out that "chemical grade limestone" had yet to be defined by the Bureau of Internal Revenue, and that very probably the definition would not be ready by the closing date for filing 1951 returns, March 15, 1952. Missouri producers present generally agreed to use 15 percent of their gross incomes in calculating their depletion allowances, because it was their opinion that Missouri limestone is chemical grade limestone.

Robert M. Koch, N.A.L.I. executive secretary, held an informal meeting of Missouri members of his organization. He discussed the status of affairs in Washington as they affect agstone producers, informing his listeners especially on the topics of PMA appropriations, percentage depletion, and OPS regulations. Mr. Koch was the featured luncheon speaker on the first day of the convention.

Columbia Phosphate Company, St. Louis, was host to the group at a reception at the Governor Hotel preceding the annual dinner.

New board members elected are as follows: Arthur R. Alvis, Butler; Jos. J. Griesemer, Billings; and H. C. Krause, St. Louis. They fill vacancies created by these retiring board members: George Baker, Lockwood;

(*Continued on page* 120)

Left to right: Jack Acuff, secretary, Missouri Highway Commission; H. C. Krause, St. Louis, and A. R. Alvis, Butler, both M.L.P.A. board members; B. P. Donnell, Valley Dolomite Corp., Bonne Terre, retiring president, M.L.P.A.; C. E. Thomson, Deitz Hill Development Co., Kansas City, M.L.P.A. vice-president; E. L. Clark, State Highway Commissioner, Rolla; J. J. Griesemer, Billings, M.L.P.A. board member; H. D. Rodgers, chairman, State Highway Commission, Benton; J. C. Harlin, Highway Commission, Waynesville; R. M. Whitton, chief engineer, State Highway Commission, Jefferson City; Tom Collins, banquet speaker; and Paul N. Doll, M.L.P.A. manager, Jefferson City.

WASHINGTON NEWS LETTER

another P.Q. and Q exclusive

IN recent months, Washington has been deluged with charges and countercharges about our defense program. But, as usual, there has been very little solid information on how well it has been progressing. Normally, the progress of a government expenditure program can be pretty well determined from budget requests and expenditure figures. Recently we have been literally showered with budget figures, but they have been suprisingly obscure on this subject.

By piecing together various bits and pieces of evidence, the U. S. Department of Commerce has, in the last few weeks, managed to come up with some general conclusions about where we are going.

The General Picture

In an overall view the figures look something like this. Since the beginning of the Korean war, the government has made available approximately $120 billion for the military functions of the Defense Department and the Mutual Defense Assistance Program. (This used to be called the Marshall Plan.) Nowhere near that amount of money has been spent. As a matter of fact, the people in charge of the defense effort have arranged to spend only a little more than two-thirds of it. Thus, only about $78 billion had been obligated for all defense purposes through December, 1951. Of this amount, hard goods—planes, tanks, ships, weapons, etc.—have accounted for about $44 billion. But, even this does not reflect the amount of actual defense production which has been accomplished. By the end of 1951 only about $19 billion worth of defense production was, in fact, delivered. About two-thirds of this amount was hard goods.

These data provide concrete evidence of what is meant by the statement frequently heard that "thus far defense production has amount to only a trickle; the flood is yet to come".

Even though 1951 saw only the beginning of the outpouring of weapons, nevertheless the defense program did account for an increasing portion of our production. Since Korea, the portion of our nation's output of goods and services allocated to the Defense Program has more than doubled. As late as the third quarter of 1950 defense production was taking only approximately 5 percent of the national output; by the fourth quarter of 1951, it had risen to 12 percent.

The Defense Program and Small Business

Of special interest to many business men is the distribution of defense contracts. There is a general impression abroad that the bulk of defense contracts go to big business. Many small business men are complaining bitterly about the fact that they do not share in the war business and that furthermore, they cannot continue with their regular civilian businesses because of the impossibility of securing necessary materials.

The Department of Commerce data reveal that over 60 percent of the total military contracts of $10,000 or more went to the 100 largest contractors. This would seem to support the notion that big companies get the lion's share of war business. This pattern is no different from the one that was followed in World War II. During that period, the overwhelming proportion of the early contracts went to the largest contractors. However, as we got deeper and deeper into that war, more and more facilities, including those controlled by small firms, were drawn into war production. The Department of Commerce finds some evidence that that same pattern is being repeated now. However, its report does not substantiate that statement with firm statistics.

The conclusion that the trend toward greater participation by smaller firms in the defense business will reproduce itself may be based on somewhat inadequate reasoning. During World War II the principal reason for drawing the small firms in was that it was necessary to bring into play every bit of available equipment to meet the overwhelming demands. They picked up the overflow of orders which the original prime contractors (primarily the nation's largest corporations) were unable to fill. No similar overflow of orders, except in a few isolated cases, is now found.

In defending their actions, the procurement officials point out that much of the military demand is of the kind that can be produced only by the larger manufacturers. For example, the aircraft industry received more than one-third of the total prime contracts that went to the 100 largest contractors. It is virtually impossible to make aircraft in any but the largest kind of establishment. Following down the list from the aircraft industry, we find the motor vehicle industry, electrical manufacturing, and then railroad equipment. These important kinds of defense products can be made only by relatively large organizations.

Statistics are missing at the moment on the amount of sub-contracting which goes to the smaller businesses. To be sure, large manufactures are unlikely to sub-contract if they have excess capacity of their own. Thus, in the automobile industry, it would be expected that sub-contracting would be at the minimum, because that industry has been forced to curtail its regular automible production by government order and because of the unavailability of critical materials.

No discussion of the impact of the defense program on small business is ever complete without mentioning that a substantial number of relatively small businesses received Certificates of Necessity permitting accelerated tax amortization. Approximately two-fifths of these certificates went to businesses with less than 500 employees. However, the proposed investment of those firms accounted for only about one-tenth of the total amount represented by all the tax amortization certificates.

Deliveries to Be Speeded Up

It certainly appears that deliveries of the defense materials will increase at an exceedingly rapid rate. American industry is now working on outstanding defense orders amounting to $40 billion. They would be working on a great deal more if the tools and other facilities required were available. The principal bottleneck, machine tools, now appears to be overcome. In addition, a great deal of our productive efforts since Korea went into the expansion of our equipment and facilities.

Expenditures on new plants and equipment in 1951 were greater than in any preceding year; they were almost one-third greater than in 1950, and they exceeded by $2 billion the record-breaking post-war year of 1948. Those new facilities are just coming into actual use. They will contribute substantially

(*Continued on page* 120)

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CITIES SERVICE

36th Annual N.S.G.A. Convention Draws Largest Crowd in History

another ON THE SPOT report

IT HAD been generally expected that the 36th Annual Convention of the National Sand and Gravel Association, which was combined with the 22nd Annual Convention of the National Ready Mixed Concrete Association, would set a new record in attendance; but no one expected the previous record set in 1950 to be so completely eclipsed. The combined conventions, held February 11 to 15, 1952, inclusive, had a total registration of over 3,395, as compared to the 2,300 plus record figure in 1950. Actually there were 1,666 producers registered during the first three days of the meeting. There were 152 ladies in attendance and 1,577 manufacturers' representatives.

In every other way this meeting was also outstanding. The program included addresses by authorities from inside and outside these industries; panel discussions; and open forums on such important subjects as defense program and construction activity, the highway picture, merchandising problems, truck axle loadings, aggregates and life of concrete pavements, price control, percentage depletion, priority ratings, allocation of materials, wage and salary regulations, employer-employee relationships, successful litigation against discriminatory practices of unions, recent decisions of the Natl. Labor Relations Board, prospecting for sand and gravel, sand classification, zoning restrictions, concrete admixtures, safety practices, and other industry, operating and technical subjects of importance to producers. Question-and-answer periods following each address gave those present an opportunity to obtain information on individual problems, and the open forums were participated in freely to an extent which continues to make them a must for future conventions. If anyone left these meetings with any unsolved problems, it was probably his own fault.

As in past years, there were combined sessions of the two associations at which subjects of direct interest to both were discussed; and these are reported here in detail in addition to those sessions dealing entirely with sand-and-gravel problems. The sessions of direct interest only to ready-mix producers are reported in THE CONCRETE MANUFACTURER section of this issue.

The Machinery Exposition held in conjunction with these meetings was also a record-breaker in size and in the completeness and quality of the displays, and it was a major reason for the record attendance. The growth of the industry in recent years and the even more rapid growth of the associations was also undoubtedly a contributing factor, as was also the rapidly-awakening realization by producers that at these meetings they can obtain information and advice vital to successful operation under present-day conditions which most of them cannot obtain elsewhere.

In keeping with the policy of recent years, the formal entertainment was limited to a joint luncheon and an evening reception given by associate members. This provided a tempting and seemingly inexhaustible array of "snacks", as well as liquid refreshments, and an excellent opportunity to mingle and make new acquaintances. A hospitality room was also provided for the other evenings for serving refreshments. Some, particularly old-timers, bemoaned the old intimacy and the cabarets and banquets, when the attendance was in the hundreds instead of thousands, but the majority seem to feel that these meetings are now too big for this setup, and that open evenings are preferable, giving everyone an opportunity to seek his

Above, new officers: John W. Murphy, Union Sand & Gravel Co., Spokane, Wash., N.S.G.A. vice-president; A.R. Shiely, J.L. Shiely Co., St. Paul, Minn., N.S.G.A. president; and R.E. Weaver, Lincoln Sand & Gravel Co., Lincoln, Ill., N.S.G.A. secretary-treasurer.

Left: Ed Nunan, Buffalo Slag Co., Buffalo, N.Y., and Harris Snyder, vice-president, Buffalo Slag Co., outgoing N.S.G.A. president.

Right: Ralph Johnson, Simplicity Engineering Co., Durand, Mich., outgoing chairman of N.S.G.A. Manufacturers' Division; and R. D. Ketner, General Electric Co., the new Manufacturers' Division chairman.

Biggest machinery show strains exhibit facilities

own company and entertainment. The Material Service Corporation held open house one evening at its plant at 33d and California, and many visited this model operation.

The same procedure was followed with entertainment for the ladies. There was a "brunch" the first morning which gave them an opportunity to get together, make new acquaintances, and make plans for the week. At this brunch the entertainment consisted of a two-hour condensation of "South Pacific".

Officers The new president of the National Sand and Gravel Assn. is Albert R. Shiely (J. L. Shiely Company, St. Paul, Minn.), who has for many years served the association in many important capacities. During his term of office the association can be assured of the experienced guidance to which it has become accustomed. He will get able and experienced co-operation from the new vice-president, John W. Murphy (Union Sand & Gravel Company, Spokane, Wash.), and the new secretary-treasurer, R. E. Weaver (Lincoln Sand & Gravel Company, Lincoln, Ill.). New members of the executive committee are E. K. Davison (J. K. Davison & Bro., Pittsburgh, Pa.), and William E. Hole (American Aggregates Corporation, Greenville, Ohio.). Directors at large re-elected are Charles E. Brady (B. V. Hedrick Gravel & Sand Company, Lilesville, N. C.); John W. Roberts (Southern Materials Company, Inc., Richmond, Va.); and Stephen Stepanian, (Arrow Sand & Gravel Company, Columbus, Ohio). New directors are J. P. Calhoun (Consolidated Gravel Company, Columbus, Ga.) and Charles E. Shipley (Thomas, Bennett & Hunter, Inc., Westminster, Md.).

Coming Conventions At the annual meeting of the board of directors of N.S.G.A. on Monday morning, February 11, it was decided that the 1954 annual convention and machinery exposition would again be held at the Conrad Hilton (Stevens) Hotel, the exact dates to be announced later. This decision was made only after long discussion with the N.R.M.C.A. board and with the manufacturers' divisions of both associations. There were many, especially among the manufacturers, who felt that Cleveland, with its public auditorium, offered advantages in the form of larger exhibit space, combined with adequate meeting rooms. The majority, however, favored Chicago because of its central location, greater hotel facilities, wider variety of outside entertainment and, last but not least, the location of the meetings and most of the conventioneers in the same hotel as the machinery exposition. There was some dissatisfaction among the comparatively few machinery manufacturers who had to accept exhibit space outside of the main hall, but these were assured that better arrangements would be made in 1954.

G. E. Melocco, Melocco Brothers, Pty., Ltd., Sidney, Australia.

The 1953 combined conventions of N.S.G.A. and N.R.M.C.A. are, of course, going to San Francisco at the Fairmont Hotel but definite dates have not yet been selected. The 1952 mid-year directors' meetings will be at the New Ocean House, Swampscott, Mass. The location for the 1953 mid-year board meetings will be decided at the 1952 mid-year meeting. Among the locations suggested are Buffalo, Los Angeles, and Bermuda.

President's Address In his address on the first day of the convention Harris N. Snyder (Buffalo Slag Company, Buffalo, N. Y.), president of N.S.G.A., first paid tribute to the memory of members of the association who had passed away since the last annual meeting. These included V. O. Johnston (Lincoln Sand & Gravel Company, Lincoln, Ill.), president

J. M. Dowdy, Marquette Cement Manufacturing Co., Memphis, Tenn., accepts the Class A N.S.G.A. safety contest award, donated by Rock Products.

Class B N.S.G.A. safety award, donated by Rock Products, flanked by representatives of the winning firm—(left to right) Q. W. Best and Frank Carrol, Consolidated Rock Products Co., Los Angeles, Calif., whose Plant No. 6 at Irwindale, Calif., placed first.

Left: T. E. Popplewell, Fort Worth Sand & Gravel Co., whose plant at Euless,Tex., won the Class C award, pays off a $100 bet to Frank Carroll, Consolidated Rock Products Co., Los Angeles, Calif.

in 1921 and 1922; Hugh Haddow Jr. (Menantico Sand & Gravel Company, Millville, N. J.), president in 1926 and 1927; R. C. Fletcher (Flint Sand & Gravel Company, Des Moines, Iowa), president in 1928 and 1929; Don D. Reynolds (Boston Sand & Gravel Company, Boston, Mass.), a member of the executive committee at the time of his death; Otto J. Ellingen (Conco Building Products, Inc., Mendota, Ill.), a charter member of the association; Hamilton Caldwell (Louisville Sand Company, Louisville, Ky.), who had held a number of important offices; and Eric W. Ryberg (Utah Sand & Gravel Products Company, Salt Lake City, Utah), a past member of the executive committee and more recently an honorary member of the board of directors.

Mr. Snyder said that the attendance at this meeting, judging from advance registrations, would be the largest in history; and he also urged that everyone take the time thoroughly to inspect the record-breaking machinery exhibition. He said that the industry had during his term of office gone through one of the most important and trying periods in its history and expressed his appreciation for the co-operation he had received from the association staff, from the members, and from the two trade papers covering this industry. Mr. Snyder particularly emphasized the importance of the work being done by the staff in keeping members fully informed on all important developments, in particular on percentage depletion, which will mean so much to the industry.

Science, said Mr. Snyder, is playing an increasingly important role in industry and the association's technical staff has kept up with such developments and should continue to do so. He mentioned the new laboratory of the Portland Cement Association at Skokie, Ill., as an outstanding addition to the facilities for investigating matters of importance to producers. Also important are the new aggregate specifications of the A.S.T.M., especially with respect to alkali reactivity, a subject which has received much attention at the Association's laboratory. Mr. Snyder said that the tremendous backlog of construction, totaling over 61 billion dollars late in 1951, and larger now, is a vast reservoir of future business for the industry. There is, he said, a need for 72,000 new bridges on the federal highway system alone, and one-fifth of the existing highways are substandard. The steel shortage is temporarily holding down construction volume, but plans must be made so that construction can go ahead at full volume when restrictions are removed.

K. G. Becker, Cleveland Vibrator Co., Cleveland, Ohio, and C. H. Bussman, central advertising manager, Pit and Quarry Publications, Cleveland, Ohio.

Joint Luncheon The annual joint luncheon of the two associations was presided over by Norman J. Fredericks, outgoing president of N.R.M.C.A. In his address he praised the important work which had been done on obtaining percentage depletion for the industry by J. Rutledge Hill (Gifford-Hill & Company, Inc., Dallas, Tex.). In recognition of his invaluable services in this respect Mr. Hill was presented with a beautiful silver punch bowl suitably inscribed.

The guest of honor at this luncheon was Clarence Manion, dean of the Law School, Notre Dame University, and author of the best seller *The Key to Peace*. In his address he deplored the fact that we are leaving the management of our national and international affairs to so-called "intellectuals" who are in a fog and who therefore make many mistakes and endanger the future of this country. Communist power, he said, is based on the fact that the rest of the world has lost the ability to hold a conviction. Our fathers had convictions, said Mr. Manion, but we have lost them. He also emphasized the danger of the growing concentration of power in this country, which means corruption and the ultimate death of liberty. This danger will end only when power is decentralized.

Manufacturers' Division The associate members of both associations held a joint meeting on Sunday afternoon preceding the opening of the convention for the primary purpose of formulating a recommendation to the boards of directors on the location of the 1954 show. It developed that opinion was fairly well divided on whether this should go to a city with a public auditorium or should remain at the Conrad Hilton Hotel in Chicago.

A luncheon meeting was also held during the convention. Ralph C. Johnson (Simplicity Engineering Company, Durand, Mich.), the outgoing chairman, presided and gave a report on activities during the last year. It was also decided to increase the number of directors from 11 to 12 for convenience.

R. D. Ketner (General Electric Company, Schenectady, N. Y.) was elected chairman of the Manufacturers' Division. C. B. Laird (Eagle Iron Works, Des Moines, Iowa) and J. Craig McLanahan (McLanahan & Stone Company, Hollidaysburg, Pa.) were elected vice-chairmen to serve along with E. M. Heuston (Bucyrus-Erie Company, South Milwaukee, Wis.) and R. P. McKendrick (Blaw-Knox Division, Pittsburgh, Pa.). Added to the board of directors were J. B. Bond (Nordberg Manufacturing Company, Milwaukee, Wis.); J. E. Dunn (Allis-Chalmers Manufacturing Company, West Allis, Wis.); Austin K. Thomas (Chain Belt Company, Milwaukee, Wis.); and Emil Deister Jr. (Deister Machine Company, Fort Wayne, Ind.).

Ahearn's Report In his annual report to the two associations Vincent P. Ahearn, executive secretary, gave the latest information on conditions in the industries and the regulations they are or may be called upon to observe. He said that there was an appreciable increase in sand-and-gravel production in 1951, but that it was probably less in percentage than the year before, and that ready-mixed concrete production in 1951 increased almost 19 percent over 1950 to a new record of about 38 million cu. yd. The expenditures for new construction in 1951 were the largest in history, said Mr. Ahearn, but the actual physical volume was about the same as in 1950. Judging from present indications, the volume of construction will be somewhat lower in 1952, as will also the demand for aggregates. He also mentioned the increased capacity built by the cement industry during the past year, which should result in little if any shortage of cement during 1952.

With respect to price relief for the ready-mixed concrete industry, Mr. Ahearn mentioned the procrastination of OPS before finally

permitting the industry to pass on the added cost of transportation of out-of-area cement. Both industries, he said, are still subject to the General Ceiling Price Regulation which contains no provision for relief, even in hardship cases. What the industry needs is a tailored order or an amendment to GCPR which will set up area or individual relief; and the association, he said, will persevere in its efforts to get action of this kind. Many other subjects were discussed by Mr. Ahearn, including wage-and-salary controls, priorities, the Taft-Hartley Act, settlement of disputes, renegotiation, alternative computation of mineral properties, freight rates, percentage depletion, and safety.

In conclusion, Mr. Ahearn said that the sand-and-gravel association has 218 active members and 77 associate members, the largest in history, and that in the last year 36 new active and 10 associate members were added. The ready-mix association has 500 active and 73 associate members, also a new record; and 71 active and 13 associate members were new in the last year.

Walker's Report For the most part Engineering Director Stanton Walker's report on engineering activities covered the ready-mix industry. An account of this part of his report is contained in THE CONCRETE MANUFACTURER, which features the N.R.M.C.A. section of the joint convention. However, Mr. Walker indicated in his general comments that many problems continue to arise and are likewise being investigated in the aggregate industry.

One of the problems which has received considerable attention is the diminishing supply of sand and gravel and the search for new sources of supply. Mr. Walker mentioned the work being done on railroad ballast, and that the association through its engineering department has been co-operating with officials of the railroads, the National Crushed Stone Association, and National Slag Association in solving related problems.

Mr. Walker emphasized the importance of the research being conducted at the University of Maryland laboratories, which are set up to serve both industries. He praised the university's Engineering Department personnel for the co-operation given the Association in solving the industry's research problems. An important phase of research currently being conducted by the engineering department is the questionable use of borderline materials, the speaker stated. Tests have been conducted during the last year, and will be conducted in the future to provide a use of borderline materials which will give satisfactory results.

The most pressing problem of the industry, according to Mr. Walker, is the removal of undesirable materials, and this important part of material preparation will be given more study. The speaker pointed out the rapid development of the ready-mix industry, and said that the call for increasing quantities of better quality concrete has its reflection on the aggregate industry. Laboratory work has been proceeding at a marked pace, in order to produce quality aggregates to aid in meeting the demands for quality concrete.

In conclusion, Mr. Walker remarked that although the essential function of the engineering department and its facilities at the University of Maryland is directed to serve the Association unilaterally, the department and the university facilities are available for the investigation of the individual problems of members.

Percentage Depletion An entire afternoon was devoted to the subject of percentage depletion, which is the most important thing that has happened to the sand-and-gravel industry in many years. J. Rutledge Hill, in his address on *Percentage Depletion for the Sand and Gravel Industry*, gave a brief history of the subject of depletion, beginning with cost depletion, which was provided for when Congress passed the first income tax law in 1913. In 1918 Congress, as an incentive to encourage the discovery and development of sources of strategic minerals, pro-

In the Pit and Quarry booth, left to right: Mrs. C. Schira, Pit and Quarry office, Chicago; C. H. Bussmann; G. P. Grant, Midwestern advertising manager, Pit and Quarry Publications, Chicago; and H. S. Stafford, Mapco Sand & Gravel Co., Minneapolis, Minn.

L. H. Barhorst, Spring Gravel Co., Fort Loramie, Ohio; A. Ernst, Ernst Gravel Co., Piqua, Ohio; Miss Joane Van Pelt, Chicago; and Edison Maurer, Transit Mixed Concrete Co., Fort Loramie, Ohio.

vided discovery depletion but the sand-and-gravel industry was never included because its deposits were ruled to be not underground. Because of the difficulty of administrating discovery depletion, percentage depletion was originated in 1926, and the rate was set at 27½ percent for oil. In 1932 this was extended to mines, and in 1942 to other nonmetallic minerals. At that time, said Mr. Hill, the industry could have had percentage depletion with proper support. Percentage depletion was first discussed at the directors' meeting in Buffalo in 1937, but no interest was shown until 1948, when it was again brought up; and what has happened since then is history.

With characteristic modesty Mr. Hill gave the credit for obtaining this benefit to others in the industry and in the association.[1] He urged that producers continue their efforts in order to retain the present 5 percent allowance and perhaps increase it to 15 percent in coming years. It must be remembered, he said, that percentage depletion is not a subsidy but a tax relief measure to encourage the discovery and development of new deposits in an industry where good deposits are already scarce in some areas.

Application of the Principle of Percentage Depletion was discussed by John T. Sapienza, tax counsel for the Association and a member of the firm of Covington & Burling, Washington, D. C. He is the author of several memoranda and of a printed publication which the Association has made available to members for the purpose of explaining the application of percentage depletion to this industry.[2] Mr. Sapienza emphasized the importance of the work done by the association's percentage depletion committee and urged that it be continued. He then described percentage depletion and its benefits and told how they can be obtained. Many who were never entitled to cost depletion are eligible for percentage depletion.

In answer to questions, the speaker said that the cost of transportation up to 50 miles can be included, and over that distance special rulings can be applied for. In order to be eligible, one must have an ownership right in the deposit as owner, lessor, lessee, licensor, etc. He urged that any in the latter categories get written leases if they do not already have them to insure their right to these benefits. In the case of a producer owning land on a navigable river but without actual interest in a river deposit, there is no proof of eligibility except that of long usage and ownership of the adjoining land. There is as yet no clear-cut cutoff point up to which depletion can be taken, but he advised producers to include everything up to loading, pending the issuance of interpretations by the Natural Resources Section of the Bureau of Internal Revenue. After the regulation is issued, taxpayers will have 30 days in which to protest, after which there will be a conference with industry representatives. He urged that all producers determine the cost of each process (or if adequate records are not available, then their overall costs) and to keep complete records henceforth. In closing, Mr. Sapienza referred all producers to the Association's booklet for any questions they may have.

Open Forum The open forum on priorities, allocations, wage-and-salary stabilization was moderated by V. P. Ahearn, with George H. Roll, Defense Materials Procurement Administration, M. B. Garber, formerly director of the Construction Machinery Division, NPA; Charles A. Horsky, Association counsel; and Kenneth Tobin Jr., assistant to the executive secretary, as members of the panel.

The forum proved to be a fine time for many individual members to discuss their special problems and to receive suggestions for solving them. One of the more general questions was:

"What percent of defense work is needed to obtain priority help?" No definite percent is needed. The end use of the product and the degree of hardship that would occur without priority assistance are the criteria.

If machinery can be obtained without priority assistance, by all means get it. Ratings should be asked for only if absolutely needed.

It was also pointed out that all agencies pass on their requirements for priority assistance to NPA. The agencies screen the applications and the NPA merely allocates the available supply among the various agencies. Manufacturers of machinery for the fields represented by the associations are at a high level but not as high as many people would like. A limitation order, M43, provides that manufacturers do not have to accept more than 50 percent of rated orders in any one month. This provides a market for machinery without need for priorities of 50 percent of the supply. Direct allocations have been resorted to for only a few very large items of machinery such as crawler tractors for use by the armed forces.

Minor additions to capital equipment are limited to 25 tons of steel per quarter and 1 ton each of copper and aluminum. These requirements may be self-rated under the symbol U-6. Other items under CMP are limited to $2,000 cost. Equipment is not under CMP and should be purchased if and when it can be obtained. Foreign steel is not considered in any allocations or orders. It is free to be used as desired.

Military requirements for construction machinery for troop use will be less in 1952 than 1951, so far as funds are concerned. However, many of the items purchased last year will not be produced until this year, and a peak will be reached soon. Scheduling is better, so shortages should be avoided. All construction machinery is regarded as having an end use that is a part of the defense effort. Ratings on orders should be used only if demanded by manufacturers, and they should not resort to asking for them unless absolutely necessary.

The discussion devoted to wage and salary controls brought out the point that the Wage Stabilization Board, which has jurisdiction over all employees covered by the Wage and Hour Law, is much more liberal in its rulings than the Salary Stabilization Board, which has control over other employees, such as executive and professional.

Bonus plans, unless in written form or as part of a contract, are likely to be viewed as a means of circumventing the wage stabilization program and should be carefully thought out before being undertaken. Profit sharing is in the same category. Where bonus plans have been in operation percentage increases or decreases may be made if the labor force goes up or down. Fringe benefits such as pensions, vacations, and insurance plans need approval of the WSB before being put into effect. These benefits must follow area or industry policy to be added. General wage increases of 10 percent may be made without WSB approval on the base pay in effect January 25, 1950, and a further cost of living adjustment computed on the Consumers Price Index change. This is 4.2 percent at the present. So employees under the

[1] PIT AND QUARRY in the last three years ran six editorials urging all producers, whether or not they were members of an association, to get behind the movement and do what they could to help their industries get percentage depletion.—The Editor.

[2] This publication was extended to cover all nonmetallic minerals especially for Pit and Quarry by Mr. Sapienza and other members of this firm and was published in the February, 1952, issue, pp. 101-103-109. —The Editor.

WSB may be given up to 14.2 percent increase over the January, 1950, base. Increases other than these require board approval. It was pointed out that the policy of the WSB seems to be to grant as many requests as possible without seeming to upset the theory of stabilization.

It was pointed out that many inequities exist between wage earners and salaried employees, due to the different attitudes of the boards. It was stated that agitation for a national wage-and-salary pattern was beginning to create pressure in Washington and that it was expected a standard that would cover the entire field would be forthcoming in the future.

Successful Suit Against Union One of the most important messages ever presented at one of these conventions was contained in the address on *Successful Outcome of Litigation Against Discriminatory Practices of Common Laborers Union* by F. E. Schouweiler (Old Fort Supply Company, Fort Wayne, Ind.). He described the conditions which led to the institution of a suit against the Common Laborers Union, A.F.L., for damages to his company growing out of an attempt by the union to impose a discriminatory rate calculated to discourage the use of ready-mixed concrete. Questions of relationships with the construction industry in the area were involved. An important principle for employers was established by the litigation which is important to sand-and-gravel as well as ready-mixed concrete producers.

The company, according to Mr. Schouweiler, established a plant in Muncie, Ind., which required the handling of cement in sacks by four or five laborers. A new batching plant was then installed to handle bulk cement, and trouble began. Friendly relations had been established with the teamsters' and operating engineers' unions, but it soon became apparent that trouble was ahead with the common laborers' union. The business agent of this union presented a contract made out for general contractors which contained no provisions related to the ready-mix business. It contained provisions in violation of the Taft-Hartley Act. After much discussion it was agreed that the company draw up a contract. The agreement was written along the lines of the one used in the St. Louis area, which is outlined in the publication of the N.R.M.C.A.

Nothing was heard from the union for several months; so the truck drivers' union, at the request of the company, put the single laborer required at the plant in the classification of helper. Still no word from the union. Soon, however it became apparent that attempts were being made to keep contractors from using the company's materials. Later the laborers' union business agent presented to the contractors a new contract which called for common labor at $1.40 per hour and ready-mixed concrete handlers at $1.75 per hour, with the ultimatum that if it was not signed within a few days, there

F. A. Olsheski, J. K. Davison & Brothers, Pittsburgh, Pa.; H. F. Lawrence, W. S. Tyler Co., Cleveland, Ohio; and E. K. Davison, J. K. Davison & Brothers.

C. C. Ruthrup, Dolese Brothers Co., Oklahoma City, Okla., and V. M. Carr, the Dolese Company, Oklahoma City.

William Knop and A. Jorganson, both of the Chicago Gravel Co., Chicago, Ill.

Right: Larry Blanchard, Iowa Manufacturing Co., Cedar Rapids, Ia.; Jack Wolff, Iowa Mfg. Co., San Antonio, Tex.; Thurman Barrett, Barrett Construction Co., San Antonio, Tex.; and Boyd Titsworth, Iowa Mfg. Co., Cedar Rapids.

Below: Clarence Manion, (center) dean of Notre Dame University Law School, and author of "The Key to Peace", autographing his book for Eugene R. Booker (left), Rock, Sand & Gravel Producers, San Francisco, Calif., and Mrs. Ben Kennedy, Culver Ready-Mix, Culver City, Calif.

would be a city-wide walkout of all common laborers. The contractors finally gave in and signed the contract, which was for a period of only 6 months. When it came up for renegotiation, the company asked for the elimination of the discriminatory rate. Upon the union's refusal in April, 1950, the firm filed suit in Fort Wayne outside of the jurisdiction of this union agent, an action which was possible because a Fort Wayne contractor was involved in the suit.

Attempts were then made to slow down jobs on which the company's concrete was used. This went on for more than a year before the company was finally able to get the union into court on October 1, 1951. Every form of legal trickery was used by the union, but finally a verdict was obtained allowing the company the $21,000 damages it had asked for. According to Mr. Schouweiler, the union has asked for a new trial, and if refused its request will undoubtedly appeal; but the company has won the first round. In any case, he said, this experience has shown that employers do have some rights and that they have a chance of winning if they have the courage to fight for what they know is fundamentally right.

Recent NLRB Decisions Charles A. Horsky, association counsel, presented his talk, *Recent Decisions by the National Labor Relations Board Which Affect the Sand and Gravel and Ready Mixed Concrete Industries,* which covered many items of current interest to producers of the two related industries. Such subjects as group bargaining, legal and illegal boycotting, secondary boycotting, and the legality of union dues collection were among those reviewed by the speaker.

Mr. Horsky pointed out that the trend of the Board in regard to group bargaining has been moving in a favorable direction, and although progress has not been as spirited as desired from the employers' standpoint, definite results can be recognized. According to decisions handed down by the NLRB, an employer may lock out employees except in cases where they would be interfering with labor union activities. It holds that an employer may protect himself from the economic effects of a strike by using the lockout practice. However, the economic value is not yet balanced, as the lockout is not the equivalent in protection of the strike.

Differentiating between legal and illegal boycotting, the speaker again expressed the gains being made by management over the pressure of strong labor unions. Recently many cases have appeared before the Board for decision, and the results have shown that gradually employer-labor relationships are improving. The classifications of legal and illegal boycotting are for the protection of business and labor alike, Mr. Horsky said, and any trespassing over the boundaries set up by each classification will be dealt with by the Board.

To define the two terms, legal and illegal boycotting, Mr. Horsky cited two examples. An example of legal boycotting, he said, would be a case in which the action is directed by the union at the primary employer to prevent a neutral employer from delivering materials or crossing the union's picket line. On the other hand, a case of illegal boycotting would be union action directed at a neutral employer to force the primary employer to bargain with the union on its terms. He added that just such persuasion alone is a violation of the Taft-Hartley Act.

One of the amendments handed down by the NLRB was in reference to the union shop clause. In effect it is this—you don't have to have a union shop election to install a shop clause or to make the clause effective; if it is a union shop, a union cannot force the employer to discharge employees except for failure to pay union dues.

Another reversal of prior Board doctrine involves the 30-day grace period regarding union membership. Formerly an employee was permitted 30 days to declare his union affiliation, and then he could withdraw from the union and be granted another 30 days to consider rejoining. However, under the new Board doctrine, although the first 30-day period for new membership remains intact, member withdrawing will no longer be given the second 30-day consideration period.

The fine audience participation in the general discussion period that followed Mr. Horsky's talk attested the keen sense of interest in this all-important subject. A good share of the questions from the floor concerned the option of producers signing a master contract or identical individual contracts. Vincent P. Ahearn, executive secretary, indicated that there seems to be a general reluctance of producers to sign a master contract; most seem to prefer identical individual agreements.

Area Bargaining *Area Bargaining in Southern California,* the subject covered by Vernon E. Lohr, California Materials Company, Whittier, Calif., related his experiences in labor relations for the sand-and-gravel and ready-mixed concrete industries in the Los Angeles area. Although local conditions may vary, according to Mr. Lohr, the essential problem is the same, that is, union pressure and management's resistance to that pressure. The industry in southern California consists of 18 companies operating 18 sand-and-gravel plants and 49 ready-mixed concrete plants. These plants deal with the A.F. of L. operating engineers, teamsters, and machinists; and two of the plants deal with laborers' and electricians' unions.

During the war when there was a scarcity of labor, the companies were forced into contracts with the unions and then found that the unions were presenting excessive demands to the War Labor Board. This resulted in the unions being given rate increases and a year and a half of retroactive pay. During this period the companies and unions were dealing with principals, with the result that pressure was being felt. The unions had gained knowledge of the companies, and the negotiators for the companies were faced with union men who had had constant experience in bargaining, while the company officials had only a limited amount gained during the annual contract negotiations. This one-sidedness caused the companies to decide that labor relations should be in the hands of a permanent committee composed of men who had the time, patience, and experience to do a job in the field of labor relations. This committee represents large and small producers of both industries and is given authority to negotiate with the unions within specified limits. The committee is composed of six men—five active members and a recording secretary.

The committee opens negotiations early to take advantage of the 60 days prior to contract expiration. During this period the committee keeps in close touch with the legal counsel. Separate meetings are held with each union to settle individual union problems. When a potential settlement seems likely, they are all brought together and the final settlement is made.

During the year the committee functions as a contract administration and grievance committee when not engaged in negotiations. Member companies are encouraged to

refer questionable matters of contract interpretation to the committee for clarification. This prevents the unions from establishing precedents with individual companies which they would later on try to broaden into contract changes. With the committee functioning as a grievance committee, many disputes are settled which might later come up at the contract negotiations. This also cements employer unity, which is necessary. Area practice is the cumulative effect of individual action. Fringe benefits particularly are likely to be negotiated on this basis.

In closing, Mr. Lohr pointed out that to yield to the unions on any point without strong, intelligent resistance was simply to add another encroachment on management's prerogatives which can never be corrected. To let the guard drop for a moment makes for bad area practice. The unions will continue their pressure. There will be new demands and proposals. The fringes will undoubtedly be pushed hard. "Our responsibility to each other, and to ourselves, for considered intelligent resistance cannot be overstressed, he emphasized. The value of employer unity cannot be overestimated. Why let the union divide and conquer?"

Defense and Construction *How Will Requirements of the Defense Program Affect Construction Activity in 1952?* was the subject of a talk given by John L. Haynes, director, Building Materials Division, National Production Authority. He sketched the procedure that is used by the various defense agencies in obtaining the necessary controlled materials for their operations. Specifically, Mr. Haynes pointed out that the NPA issues permits for industrial, educational, and commercial buildings. Other allocations affecting the construction industry are made by the Bureau of Public Roads and the Housing and Home Financing Agency for roads and housing respectively.

The NPA and more than 40 other agencies send their requests for critical materials to the DPA. Here estimates of production from the makers of steel, copper, aluminum, and other controlled materials are balanced against the requests of all of the certifying agencies, and the necessary adjustments are made so that the supply and demand are equalized. The certifying agencies then apply the percentage figures to the individual requests from the users. At the present, requests for steel are being allowed at the rate of 70 percent of the base period and for copper and brass at about 30 percent.

Mr. Haynes pointed out that consideration was also given to the chain reaction that building starts. While one house does not use significant amounts of materials in construction yet it creates a demand for water and sewer lines, electricity, gas, telephone, and other utilities, and for a whole line of home appliances, many of which require fairly large amounts of copper and other critical materials. Actually, the amount of critical material used in building the house is minor, as compared with the secondary demand that is created.

Mr. Haynes also stated that lumber, brick, tile, and virtually all of the nonmetallic minerals used in construction are in good supply. The cement shortage has been substantially eased by the erection of new plants and by increased capacity in old ones. He predicts that the crisis in cement production is over, and that any shortage will be due to transportation or other causes. Aluminum companies, like cement firms, have greatly increased capacity; and, barring unusual requests for plane construction, the metal will be in much better supply by the end of 1952.

It is expected that steel supplies will be much better by the last quarter of the year due to completion of many defense projects requiring large amounts, and the increased capacity of the steel plants. The demand for steel is expected to level off so far as defense requirements for structural steel are concerned.

Military expenditures for new construction will double from the rate of 1951 and will reach $1,700,000,000. Residential construction is expected to reach $8,000,000,000, and highway construction will decline about 10 percent to about $2,000,000,000. The total volume of construction is expected to be about 10 percent below 1951.

Meeting the Highway Problem The second talk of the session was on the subject of *Our Highway Problem*

A. Goldberg, Allis-Chalmers Manufacturing Co., Milwaukee, Wis., and W. E. Hole Jr., American Aggregates, Greenville, Ohio.

J. C. White and M. Norris, J. C. White Concrete Co., Des Moines, Ia.; and E. H. Holt, J. D. Turner, E. R. Oestreicher, and James Clayton, Barber-Greene Co., Aurora, Ill.

and Some Recommendations For Meeting It, by Arthur C. Butler, managing director, National Highway Users Conference. In opening his talk, Mr. Butler pointed out that time, money, and lives were being lost daily by inadequate highways. Among the major difficulties confronting the highway user are congestion of vehicles, parking which takes away valuable road space, accidents, and bad surfaces, which lead to slowing of traffic and to accidents.

These problems, stated Mr. Butler, have been brought about by the increase in the number of vehicles using the highways and the great increase in mileage of the vehicles on the highways. Adding to the highway difficulties are the lowered purchasing power of the dollar and, too often, the diversion of funds from highway revenues to other state and municipal uses.

To combat the problems, Mr. Butler urged all his listeners to get behind the P.A.R. program being sponsored by the National Highway Users Conference and other organizations. This program, "Project Adequate Roads," stresses the importance of analyzing the needs of the nation in terms of highway sufficiency ratings. This method of sufficiency ratings is based on the classification of the roads by use and on the assigning of a numerical rating to the road on the basis of structural character of the surface, the service for which it is used, and the safety features. While these ratings have been well worked out for highways and are used by the Bureau of Public Roads and more than 20 states, they are subject to modification in urban areas, for which standard ratings are being worked out.

Mr. Butler pointed out that the highway problem could be corrected by the use of sufficiency ratings to determine which roads needed most attention; by classification of highways by use; by a fair division of costs among highway users and those benefiting from the highways indirectly; and by better administration at all levels. He invited the co-operation of all groups to provide the local stimulus necessary to obtain better highways.

Illinois Road Plans Frank N. Barker, chief highway engineer, Division of Highways, Illinois Department of Public Works and Buildings, spoke on *The Future Highway Program in Illinois.*

Mr. Barker pointed out that the highway program in the state of Illinois was responsible for taking the state out of the mud, literally, in the last 40 years and that secondary results of the program have been the growth of suburban communities, decentralization of industry, consolidation of schools, development of new shopping areas, and a complete change in the way of life of thousands of people.

During the period of highway development the concept of what constituted a good highway changed. In the early days getting out of the mud was the primary objective. There was plenty of money and few problems; so the objective was easily attained. Then followed the period of relief labor projects, when expansion and improvements were undertaken. World War II, with highway use rising and maintenance at minimum levels, saw a deterioration of the highways. After the war came an unprecedented expansion of highway use which aggravated the accumulated deterioration of the war years and pointed up the inadequacy of many roads.

Automotive transportation, stated Mr. Barker, is the end product of the greatest combination of industries in the world, including the automobile and truck manufacturers, petroleum producers, and highway builders. Altogether, these industries account for ⅛ of the national income.

Faced with this picture, Mr. Barker said that the function of the highway officials is to report the needs, using sufficiency ratings as a guide, and to let the legislators and the public decide just what should be done to meet the needs. Illinois needs about $2,805,000,000 to bring its highways to a satisfactory level. Increased license fees and highway taxes are still insufficient, although they have been increased recently. The total national needs have been set at $32,000,000,000 on Federal-Aid highways alone. About half is needed on primary roads, and the balance on secondary and urban projects.

In closing, Mr. Barker stated that the needs of Illinois for primary roads was $1,000,000,000 on the basis of sufficiency ratings used on rural highways. A rating system for urban areas is being established. The backlog of highway building is tremendous and will take years for completion.

Prospecting *Prospecting for Sand and Gravel* was discussed by Fayette J. Cloud, vice-president, W. R. Bonsal Company, Hamlet, N. C. The need for a machine that would provide accurate, rapid and inexpensive tests was pointed out. This is necessary to determine the extent of deposits for amortization of costs needed to develop them and for determining the profit that might be realized. Visible deposits are largely worked out, and hand methods no longer suffice to give sufficient information. Tighter specifications also increase the need for more careful evaluation of deposits to determine the economic feasibility of exploiting them.

Mr. Cloud pointed out that his company had used the hand shovel method, which was accurate to a depth of 6 feet. For greater depths, draglines or clamshells were used to open several cuts where the deposits could be studied. In underwater or caving deposits these methods are unsatisfactory, and an orange peel bucket operating in a casing was used. Augers were useful, but there were limitations on their use, and it was felt that they were not entirely accurate. A well-drilling machine that was being used in deepening wells during a drought in the vicinity of Mr. Cloud's plant attracted his attention. The machine was built to drill a 24-in. hole that was lined with concrete pipe.

In drilling for sand-and-gravel deposits, the machine has proved quite accurate and is reasonable in price and inexpensive to operate. In operation the machine digs like an auger, but preserves a core similar to core drills. In underwater deposits a casing is used to prevent slumping and a modification of the drilling head is made, so that a valve may be closed when the head is reversed 90 degrees.

The machine consists of a rubber-tired frame which has a revolving platform mounted on it. This platform has a hoist and the mechanism for operating the square drill rod, which is in 10-ft. lengths. The maximum depth is 65 ft., and the machine is suitable only for soft deposits. It is privately made. Costs, stated Mr. Cloud, have been 32½ cents a ft. in dry deposits and about twice as much in wet ones. The machine costs about $3,500.

Electric Resistivity Otto S. Conrades, president, St. Louis Material and Supply Company, St. Louis, Mo., described his experiences with the electrical resistivity method of determining the extent of deposits. This method utilizes the differences in electrical conductivity of various materials to determine their depth. While Mr. Conrades did not attempt to explain the technical operation of the

equipment used, he did point out that sand and gravel were poorer conductors of electrical current than soil or rock and that this difference was used in plotting deposits. Test borings made on the trial plot showed a correlation that was striking. Less than 2 feet of difference between the profile made by boring and that made by electrical resistivity was found when the depth of overburden was about 20 feet.

Mr. Conrades stated that the electrical method cost about $10 an acre when profiles were run on 50-ft. lines. While his company was interested only in determining depth of overburden, as their deposits rest on a known bed rock base, he pointed out that the method can also be used to give top and bottom limits of deposits and to indicate rough size gradations. The limit of depth for the method is about 100 ft. He concluded that this method, when coupled with known facts from test borings, is a rapid, valuable, and inexpensive method of exploration.

1,000-t.p.h. Gravel Plants *The Construction and Operation of a 1,000-ton Per Hour Gravel Plant* was the subject of a talk by R. K. Humphries, vice-president and general manager, Pacific Coast Aggregates, Inc., San Francisco, Calif. When the construction of a new plant became imperative, he stated, the company officials drew up a list of objectives that were to be designed into the plant. Among these, in addition to the capacity and correct sizing and washing of the products, were such important features as all-steel-and-concrete construction, adequate electrical wiring in conduit or underground cables, centralized control systems, plenty of headroom for conveyors, provision for unit replacement of equipment, adequate space for blending and segregation of products, and ample loading capacity. The plans also called for profitable operation of the plant at less than capacity and for further expansion with the minimum of interference with operations or expense.

To obtain these objectives, Mr. Humphries explained, all of the outside engineering help that was available was utilized. Many manufacturers are glad to offer such services and his firm made full use of them. These suggestions and plans were compared with the company's experience, and the suggested equipment was analyzed to see if it was best for the use. A search for new machines was also undertaken, and in all cases actual operating examples were sought.

Mr. Humphries gave some advice to producers planning a new plant. In selecting the equipment, obtain firm delivery dates from the manufacturers so that unforeseen delays can be avoided. Get the primary units operating even before the plant is completed, so that modifications can be made early in the construction.

Colored slides of the plant were used to show the equipment and methods that were used to obtain the results desired in constructing the new plant—that is, capacity of

E. R. Boate, Bacon-Pietsch Co., New York, N.Y.; Phil Corson, G. & W. H. Corson Co., Plymouth Meeting, Pa.; and W. V. Pietsch, Bacon-Pietsch Co.

1,000 tons per hour, with complete push-button control over the production of any kind of finished specification sand or gravel.

Sand Classifying *Classifying Sand to Maintain Optimum Percentages of Fines* was covered by E. A. Goodman Jr., general manager, Lessees of B. V. Hedrick Gravel and Sand Company, Lilesville, N. C. He explained the problem that faced one plant of retaining as many fines as possible in the sand and at the same time removing all of the sticky, plastic clay that was present in the deposit. Mr. Goodman described the setup of the plant which sent the wash water to a 19-ft. Dorr Auto-Vortex Bowl Classifier. This discharges into an Eagle Twin Screw Dehydrator. The overflow from the classifier and dehydrator goes to a tank from which mortar sand is reclaimed by clamshell. The overflow from the tank is sent to a Cottrell Whirlcone, where additional fines are recovered. Each Whirlcone, according to Mr. Goodman, adds approximately 4 percent to the minus 50-mesh material and 1 percent to the minus 100-mesh material for each 50 tons of sand produced.

A. C. Butler, National Highway Users Conference; F. N. Barker, Division of Highways, Illinois Department of Public Works and Buildings; and J. L. Haynes, Building Materials Division, National Production Authority.

Another plant which has a surplus of fines and silt maintains control of the fines by using two 22-in. by 18-ft. Telsmith screw dehydrators in series and increasing the volume of water going to them. This amounts to a double washing of the sand, with the minimum of space for settling of fines and silt.

These methods have kept fines to an optimum and have led to an acceptance by the ready-mixed concrete operators in the area who have found that better control of the water-cement ratio due to the constant gradation of sand produces a more uniform product and saves money.

Aggregates in Pavements Reporting on the findings of several field investigations and routine laboratory tests, K. B. Woods, associate director, Joint Highway Research Project, and professor of highway engineering, Purdue University, revealed that there is a definite correlation between coarse aggregate and the performance of portland cement concrete. Mr. Woods presented data procured from various published reports, articles from *Proceedings*, Highway Research Board, being the principal source of information. This data, together with an extensive field study of Indiana pavements and large-scale laboratory tests conducted at Purdue University, formed the basis of the coarse aggregate correlation theory.

The overall results of these investigations established one primary theory substantiating the importance of quality coarse aggregates in regard to quality pavements, according to the speaker's report. Resistance to freezing and thawing is a recognized criterion for the durability of concrete. Blow-ups and general deterioration in pavements

are the result of the inadequacy of the concrete to meet these demands of resistance to freezing and thawing. Consequently, concrete containing coarse aggregates with a rapid and high absorption rate will bring about more rapid disintegration of the pavement.

In field tests conducted in the state of Indiana, a comprehensive survey was made of 3,300 miles of pavement with cements from 17 sources, fine aggregates from 138 sources, and coarse aggregates from 155 sources. Considerable attention was given in the survey to general deterioration and blow-ups, Mr. Woods said. It was concluded that an important correlation existed between certain sources of coarse aggregates used in these concretes and the susceptibility of the finished pavement to blow-ups and concrete deterioration. Likewise, it was shown that correlation existed between the use of certain other coarse aggregates and the absence of blow-ups and deterioration in the completed pavements.

When consideration is given to the fact that correlation did not exist between the source of cement used, the source of fine aggregate used, the time of year constructed, the type of subgrade soil, and other variables, it appears that coarse aggregate has been an important factor in the performance characteristics of portland cement concrete pavements in Indiana. When these data are combined with those from other Midwest states—Kansas, Missouri, Kentucky, and Iowa—it is apparent that the quality of coarse aggregate is an important matter throughout the Midwest.

In an endeavor to determine the reason for the recorded good and bad pavement performance in Indiana, large-scale chemical and physical laboratory programs were developed at Purdue University through the facilities of the Joint Highway Research Project. Although the chemical program has not resulted in any established correlation, physical testing has developed some important findings. It was concluded that an almost complete disintegration of concrete beams made with aggregates with poor service records could be produced by the simple expedient of water-saturating the aggregate in a vacuum before incorporation in the concrete mix. Such beams could be almost completely destroyed in a few cycles of freezing and thawing. In contrast, beams made with aggregates having good service records showed no apparent distress even after 200 cycles of freezing and thawing when subjected to the same conditions of processing and testing as those beams made with inferior aggregates.

Mr. Woods presented a film showing sections of Indiana highways which were subjected to the field and laboratory tests. This visual information substantiated the talk he had presented. Another important result of these tests brought out in the film was the conviction that expansion joints are no longer needed to produce quality pavement.

Concrete Pavements Methods of marketing farm products, the changing pattern of distribution of urban population, and an economic system which has brought about an increased number of passenger cars and trucks, have created a pressing need for highway development. In his talk, *Concrete Pavements—Their Utility and Their Future,* G. Donald Kennedy, consulting engineer and assistant to the president, Portland Cement Association, discussed the ever-increasing problems of transportation loads on highways, suggested means of relieving these loads, and cited the contribution concrete research has made in promoting the longer life of highways.

In regard to the use of expansion joints, it has been found, after prolonged studies of numerous experimental projects, that more highway engineers have adopted the practice of omitting expansion joints except at structures.

Mr. Kennedy reported on the history and the findings of the Maryland Test Road, a test which was made on a 1.1-mile section of a 10-year-old concrete pavement which had successfully carried its full share of normal and wartime traffic when it was selected for the accelerated truck traffic test. The most important conclusion to be drawn from the test, according to the speaker, was that not a single structural crack developed in any of the 28 40-ft. concrete slabs built on the non-pumping granular sub-base.

Controlled Axle Loadings *Effect of Controlled Truck Axle Loading On Highways,* was the subject covered by Fred Burggraf, director, Highway Research Board. The first test conducted on axle loading was by the Illinois Division of Highways in 1922 and 1923. This test consisted of 68 experimental sections which included 29 concrete sections, 22 brick sections, and 17 of asphaltic concrete. Variations in base course, thickness, and design were incorporated in the three types of pavements. Tests were conducted with solid-tired trucks carrying increasing loads and operating at 12 to 15 m.p.h. speeds day and night. This test established that a plain concrete section 8-in. thick with a rupture modulus of 730 lb. p.s.i. could carry an axle load of 16,000 lb.

At the time of the Illinois tests the Bureau of Public Roads studied the impact effect of solid, high-pressure pneumatic and balloon tires. These studies showed the superiority of the balloon tire. On the basis of these tests the Highway Transport Committee of the A.A.S.H.O. recommended a 16,000-lb. axle load limit, with the restriction on solid tires of a 10 m.p.h. speed limit. In 1942, ten years after this recommendation, when balloon tires were almost universally in use, the limit was raised to 18,000 lb., with no speed restrictions. This was retained as the limit in 1946. These studies and recommendations are the basis for the 18,000-lb. axle load limit now prescribed by law in 34 states.

There was an interval of 28 years between controlled axle load investigations, stated Mr. Burggraf. The next investigation was undertaken in 1949 by the Interregional Council on Highway Transportation. The investigations were conducted by the Highway Research Board of the National Research Council on behalf of the highway departments of 12 states and the Bureau of Public Roads. Trucks were contributed for the project by the Automobile Manufacturers Association; and gasoline, oil, and grease were supplied by the American Petroleum Institute. Controlled traffic tests and soil and strain tests were made over an 18-month period. The object of the test was to determine the relative effects on a particular concrete surface of four different axle loadings, two single and two tandem axles being used. The information was needed to determine load-carrying capacity of existing pavements, for designing new pavements, and for framing legislation on highway transportation.

The pavement tested was a 1.1-mile section consisting of two 12-ft. lanes, each having a 9- 7- 9-in. cross section, reinforced with wire mesh. Expansion joints were at 120-ft. intervals and contraction joints at 40 ft. Transverse joints were doweled with ¾-in. bars on 15-in. centers and the adjacent lanes were tied with 4-ft. bars at 4-ft. intervals.

The tests consisted of comparing

the relative effects of 18,000- and 22,400-lb. single rear axles, and 32,000- and 44,800-lb. tandem rear axles on the pavement. About 400,000 miles of driving was involved. Strain and deflection tests were made and the soil was tested. The Bureau of Public Roads supplied personnel and laboratory facilities for making the field and laboratory tests and analyses.

From the thousands of individual tests made, the following conclusions have been reached. No pumping or cracking occurred in single-axle loads where the subgrade soil was non-plastic and granular, with less than 9 percent passing the No. 200 sieve. Slight pumping but no cracking occurred on the 22,400-lb. single axle load where the soil contained more than 9 percent passing the No. 200 sieve. The soil under the test pavements is a silty clay of the A-6 soil group.

Cracking and depressing of joints is definitely related to pumping, cracking being markedly greater at the vicinity of expansion joints than at contraction joints. Cut-and-fill sections were equally susceptible to pumping, but the average amounts of cracking were greater in cut than in fill sections. The combined supporting ability of the subgrade and the pavement was slightly less than adequate for the 18,000-lb. single axle load and substantially less adequate for the other loadings.

Strain and deflection tests revealed that the magnitude of induced stress and pavement deflection decreased with increase of vehicle speed. The stress and deflection of the edge of the pavement was reduced by increasing the distance of the wheels from the edge. The failure of the slabs was due to deflection which was sufficient to cause pumping of the soil. The deflection increased to a point where the magnitude was sufficient to cause cracking. This was more rapid under heavier loadings.

Mr. Burggraf mentioned that a full-scale test of bituminous pavement will be carried out by the Highway Research Board in cooperation with 10 state highway departments of the Western Association of State Highway Officials, the Bureau of Public Roads, and the petroleum and truck manufacturing industries. This test will cover several thicknesses of pavement, thicknesses of surfaces of several types of bituminous materials, and four axle-load combinations. The Mississippi Valley Association of State Highway Officials is also planning to consolidate all tests into one comprehensive one to be determined later.

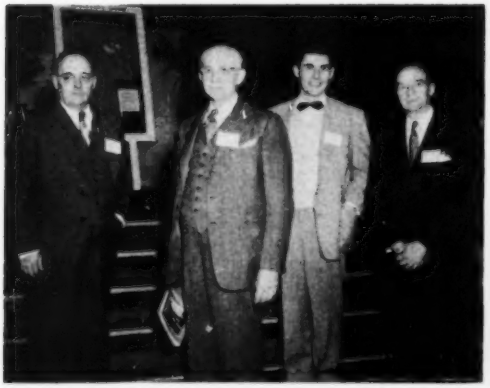
Zoning Restrictions Zoning as currently administered throughout the United States is providing a continual threat to the sand-and-gravel industry, and the compulsion of self-survival requires that producers help to develop a plan of zoning which would best satisfy the interests of the public, as well as their own. This was the opinion of William Edward Hole, president, American Aggregates Corporation, Greenville, Ohio, who discussed the subject, *The Growing Problem of Zoning Restrictions.*

To be of any constructive use, a zoning law must meet two tests, the speaker declared. First, the law must serve the best interests of the public in regard to health, community spirit, general welfare, etc. Second, the law must not be arbitrary or unreasonable. Mr. Hole emphasized that the public demands consideration, and suggested that a way of meeting this obligation to the public would be to allocate sand-and-gravel plants to the areas where good material can be found, rather than to let this land go to waste or be used for some other purpose which would not be as beneficial to the communities the area serves.

Zoning laws today prohibit sand-and-gravel plants from locating on a site without permission, although it may contain an adequate supply of quality material. Zoning retards increased production activity of this industry, the speaker said, and since industry is the source of our community life, its needs must be satisfied by a proper rural zoning plan.

Quality sand and gravel can be obtained only in areas where it has been deposited, the speaker pointed out; and it is the right and duty of producers to see to it that rural and urban zoning laws alike respect this fact. The laws should be made to consider the fact that the sand-and-gravel industry with its economic contribution to the community should not be penalized. Mr. Hole warned that these restrictions, as they exist today, present a real threat to the expansion of the industry.

The zoning ordinance, as amended in 1951, has afforded some relief for producers in that the sand-and-gravel industry has been placed in its own classification, so that it no longer carries the burden of other useful industries such as coal and oil. In conclusion, Mr. Hole stated that the



L. C. Laymon and G. H. Hartman, both of the Dravo Corporation, Pittsburgh, Pa.; R. C. Shisly, Guaranteed Concrete Co., St. Paul, Minn.; and V. F. Carter, Utah Sand & Gravel Products Corp., Salt Lake City, Utah.

Sid Lieberman, Zeligson Truck & Equipment Co., Tulsa, Okla., and Mrs. Sid Lieberman, Tulsa.

industry is literally "fenced in" by zoning, and that producers must learn to live with these restrictions to the best of their advantage or perish.

Bituminous Pavements The increase in volume of work, accompanied by a reduction in personnel capable of giving proper supervision, and an increase in traffic density, both in numbers and weight, necessitated a search for a means of improving the quality of pavements, according to C. E. Proudley, chief materials engineer, North Carolina State Highway and Public Works Commission. In view of these problems it soon became apparent that secondary road systems were needed to relieve the situation, the speaker said; and soon bituminous paving mixtures came into the limelight as a low-cost type of surfacing.

The bituminous paving program has expanded almost explosively in North Carolina during the last three years, Mr. Proudley stated. The secondary road program has influenced the road-building policies in other states as well as in North Carolina. Use of this flexible type of surface involving the hot-plant-mix type has become economically feasible because of the increase in the number of contractors having equipment for this type of construction, he said.

When resurfacing old concrete pavements, many of which are now 30 years old, it is customary to use a bituminous concrete leveling course, topped with either sand-asphalt or bituminous concrete of somewhat better quality. The specifications under which bituminous pavements are built in North Carolina are not unique in any respect. The principal points of control are the grading of the aggregate, the percentage of bitumen, the characteristics of the bitumen, and the temperature at which the materials are mixed and placed.

Another important feature of bituminous pavements, as well as other types, is the skid-resistance property. The North Carolina Research Department of the Highway Laboratory has been gathering data concerning skid resistance, stability, density determinations, etc., in order to correlate the tests with the behavior of the paving mixtures in the field. Currently samples are being taken from bituminous pavements, both good and bad, to further develop information on what causes bituminous pavements to be satisfactory or unsatisfactory. An important observation thus far is the existence of considerable amounts of moisture between the rigid base and the asphalt surface. However, these moisture accumulations are not noticeable on flexible types of bases except where drainage conditions are unsatisfactory.

In regard to the experience North Carolina has had with sand and gravel in bituminous mixtures, Mr. Proudley pointed out that there has been no trouble at any time which could not be traced to some factor other than basic materials. Therefore, it is logical to assume that sand and gravel are satisfactory materials for the construction of bituminous pavements, he said. In support of these statements Mr. Proudley presented reports from observations made throughout North Carolina.

Mr. Proudley mentioned that examination of asphaltic concrete pavements involving aggregates other than gravel and sand generally showed moisture and stripping conditions. Stripping, therefore, seems to be a problem common to most bituminous pavements built on portland cement concrete bases, and, according to the speaker, the same problem exists in other states. It is believed that if the moisture which accumulates between the concrete base and the bituminous resurfacing can be eliminated, stripping will not occur. If stripping does not occur, the stability of the pavement should continue to be as good as or better than when resurfacing is first placed. Bituminous paving mixtures can be designed in the laboratory to give satisfactory stability.

The fact that North Carolina has had satisfactory service from so many jobs in which natural sand and gravel were the aggregates, proves, according to the speaker, that for unsatisfactory jobs the cause is more apt to be found in one or more of these factors: poor gradation of aggregates, poor quality in the source of aggregates, an improper amount of bituminous material, segregation of the materials or insufficient mixing, inadequate drying of the aggregates before putting them through the hot-mix plant, mix too hot or too cold, etc.

In conclusion, Mr. Proudley stated that highway officials in North Carolina believe that for bituminous concrete mixtures it is better to use coarse aggregate in which at least 50 percent of the particles coarser than the No. 4 sieve have one or more freshly fractured faces.

Missouri Limestone Producers

(*From page* 105)

Kenneth Kilkenny, West Plains; and Ed Markwell, Auxvasse Stone and Gravel Co., St. Louis.

The following officers were elected: president, Buford V. Everett, Everett and Clark, Plattsburg; vice-president, C. E. Thomson, Deitz Hill Development Company, Kansas City; treasurer, Carl Partin, Milan. Paul N. Doll was re-elected manager of the association; and the attorneys, Hendren and Andrae, Jefferson City, were retained for 1952.

Washington Newsletter

(*From page* 106)

to increased output. In the steel industry, for example, most of the facilities being built as a consequence of having secured rapid tax amortization privileges are not yet in actual use but will come into use in substantial quantities in 1952. Although this expansion of capital goods is still continuing through 1952, there is some evidence that it is beginning to taper off. Ever since the beginning of the Korean War each succeeding quarter has shown an increase in expenditures for new plant and equipment, up through the last quarters of 1951. The first quarter of 1952 shows a drop of 10 percent from the last quarter of 1951. This is still a record rate of out-lay for new plant and equipment, but the peak seems to have been passed.

With this equipment available, it is entirely likely that practically all of the funds which have been made available for defense will be obligated, since it will be possible to determine where and how the necessary requirements will be met. In addition, there is no question but that Congress is likely to continue a fairly sizable appropriation for the defense program.

It was the conclusion of the Department of Commerce that "the defense program is certain to expand steadily during 1952 and to be the major driving force in the economy".

Fort Dodge Limestone Co. To Open New Iowa Quarry

Operation of a large limestone quarry for the Fort Dodge Limestone Company, Fort Dodge, Ia., is expected to be started in the near future at a 100-acre site near Humboldt, Ia. The limestone deposits on the property are found at levels of a few inches below the surface to depths of 27 feet.

A processing plant being built on the site is expected to be in operation by March 1. Some of the crushed limestone will be used in surfacing roads in the area. The North Western Railroad is laying a 1,700-ft. spur line to connect the plant with its main tracks.

Factors Affecting Flotation

PART I

INTRODUCTION

By H. J. GISLER
Chief Metallurgist
Denver Equipment Co.

The science of flotation is rapidly growing in importance in the production of nonmetallic minerals, especially those known as industrial minerals. In these pages, through the years, we have attempted to keep our readers informed on flotation developments of interest to them. We have published many articles describing flotation installations in our various industries and also articles of a more general nature. Nowhere, however, were we able to obtain a complete discussion of the subject in one article. We are happy, therefore, to be able to present in this issue the first of two installments of an article which gives complete coverage of the entire subject of flotation in compact form, for the processing of both metallic and nonmetallic ores. It was written by H. J. Gisler, chief metallurgist of the Denver Equipment Company, an outstanding authority on flotation, both in the metallic and nonmetallic minerals industries, and is reprinted with minor changes and deletions from a bulletin issued by that company.—The Editor.

IN MILLING, and particularly in flotation, we all appreciate that the more constant the operating conditions are, the better the results. The purpose of this article is to analyze the variables which affect results and to suggest methods of controlling these variables so that plant results may be improved. Such factors as grade of ore, tonnage, grind, dilution, time, temperature, reagents, etc., when kept under control, contribute greatly to the success of any milling operation. How well these factors are controlled is reflected in total operating time which, as a rule, must be without any interruptions or delays. A steady operation that keeps going 24 hours a day every day is generally a successful one. The old adage, "One hour's delay means no profit today," is more important now than ever before.

It is not always possible to maintain constant operating conditions, and this is particularly so in the average small mill. Ore reserves may not be blocked out far enough in advance to insure a uniform grade of feed to the mill. The solution to this condition is to have a flexible flowsheet in order to cope with such variations with the least amount of expense. More planning when designing the mill and laying out the original flowsheet is usually repaid many times over in a greater economic return.

FACTORS AFFECTING FLOTATION

The following factors apply in particular to flotation. They should be given careful study and consideration when planning on treating any ore by this process:

Oxidation of Mined Ore How to get the ore to the mill as quickly as possible is very important. Naturally, flotation is more positive on a clean, sulphide ore than on an oxide ore; therefore, the longer an ore remains broken in the stope or in transit to the mill, the more the ore will tend towards an oxidized condition. Old tailings, dump ore, and stope fills usually show a varying degree of oxidation requiring special milling treatment and modifications in reagents. Laboratory tests are effective in selecting the best combination of treatments.

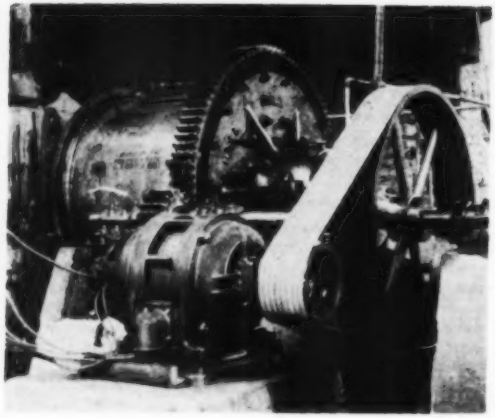
The mineral jig and also the unit flotation cell both play an important part in compensating for the time factor by removing tarnished or oxidized minerals at a coarse size from the grinding circuit. Oxidation is approximately in proportion to the mineral surface area, so mineral removal before sliming naturally is reflected in a higher recovery.

Mesh Size Ores should be ground only fine enough to unlock the values. The degree of grinding should be determined by actual test, and removal of free mineral at the coarsest possible size is always desirable. Modern flotation takes this into account, as is evidenced by the general trend toward floating the mineral in stages, first coarse, then fine.

The author, H. J. Gisler, chief metallurgist at the Denver Equipment Company, solves a tough problem with the aid of a 2,000-gram Denver laboratory flotation cell.

The advantages of floating a mineral as coarse as possible include: lower grinding costs; greater recovery by avoiding slime losses; fewer colloids, due to coarser grinding; less thickener and filter area required as granular concentrates settle fast and filter rapidly; drier filter cake, therefore less freight; possibility of discharging coarse clean tailing; less flotation equipment required; and higher grade concentrate.

In many large-scale flotation operations it may be more economical to produce a coarse final tailing and regrind the resulting low-grade rougher concentrate or middling product. The secondary or regrind operation, treating only a small per-



A Denver steel head ball mill operates in a 500-ton pyrite washing and concentrating plant in Brazil.

centage of the original mill feed, can therefore be carried to a size fine enough to liberate mineral from middling. Subsequent flotation then produces the maximum grade, and final recovery results in the greatest economic return per ton of ore milled.

Often existing practice has interfered with the more general application of coarser grinding, as there are many who are convinced that the coarser the feed the more trouble will be encountered in the subsequent concentrating department, particularly flotation. Modern milling equipment has been designed to handle coarse pulps efficiently. For example, the cell-to-cell control and sand relief openings in a flotation machine permit handling pulps as coarse as 10-mesh without impairing metallurgical results. The use of molded rubber wearing parts has reduced the problem of abrasion which is aggravated by handling coarse material. It is even possible to grind in closed circuit with vibrating screens where the bulk of the mineral concentrates is in the coarser screen sizes. Sand will not interfere with flotation if the sand in the pulp flows with the current of the pulp containing the air bubble and its mineral load, and if the sand is not allowed to accumulate in a high-density zone in the cell.

One outstanding trend is the general application of a unit cell or a jig in the grinding circuit for removing coarse free mineral. In some of the more modern mills this idea is being carried still further by operating a bank of flotation cells for maximum and high recovery in the grinding circuit. In this latter instance flotation tailings are returned to the classifier, sands reground for retreatment, and classifier overflow considered final tailing.

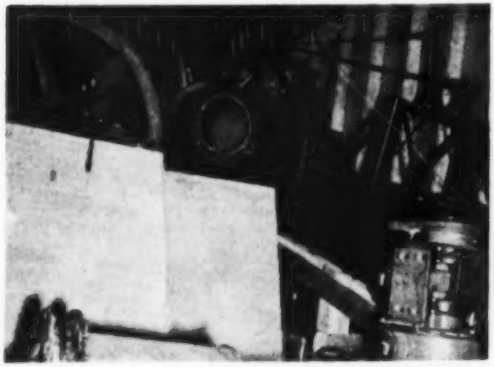
With equipment available to handle coarse pulps efficiently without choke-ups, the trend in flotation is toward coarser grinding wherever possible. Existing grinding equipment can be made to treat larger tonnages at lower cost per ton and, in some instances, screens are replacing classifiers in conventional mill circuits.

Water Fresh water should be used wherever possible as flotation may be affected even by small traces of soluble salts present in the water supply. Mine water usually contains acids and other elements detrimental to flotation. Organic acids may be present in swamp water and if used may have to be neutralized. Water reclaimed from mill tailings may also be a source of trouble and its re-use in many cases is almost out of the question unless given special treatment to remove soluble salts and to neutralize reagents which may be present.

One selective flotation plant in Arizona adds a small amount of phosphate mineral (apatite) to the grinding circuit. This has been reported to aid in re-using mill water and controlling frothing conditions in the selective flotation circuits.

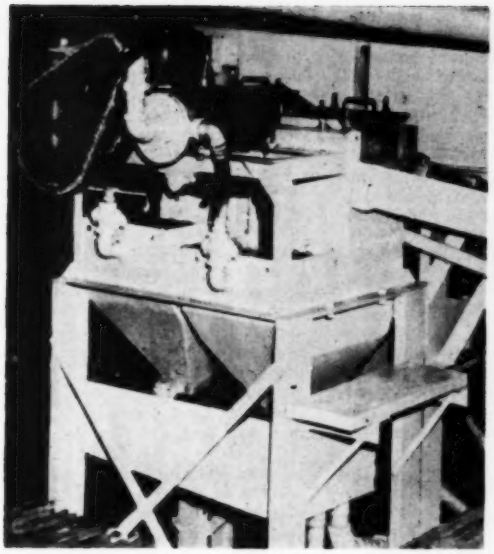
In planning a flotation operation, an adequate water supply should always receive early consideration. A complete analysis is advisable, and laboratory flotation tests should be checked with the mill water supply to determine whether reagent modifications are necessary. This applies to nonmetallics as well as sulphide and oxide ores. Water hardness, if excessive, may have to be corrected by the usual zeolite or soda-lime softening processes, particularly on nonmetallic ores where fatty acid reagents are used. One large operation in Bolivia is now using zeolite softened water in the complete mill operation at a very low cost.

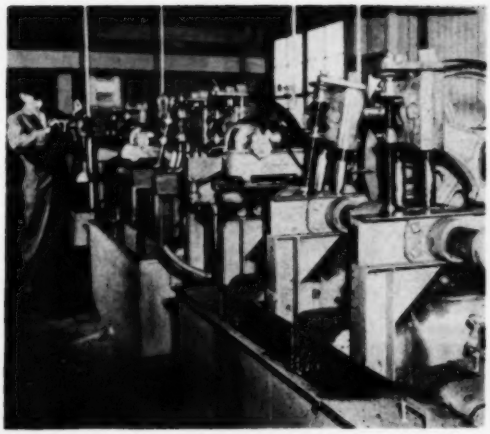
Fresh water added to flotation cleaner circuits has, in many cases, improved metallurgical results. Greater selectivity and higher grade concentrates are often the result of this practice. In circuits where a substantial portion of the water has



A large Canadian cyanide plant uses a regrind circuit consisting of a 4- by 4-ft. Denver ball mill, a 2- by 14-ft. 8-in. Denver classifier, and a Denver vertical sand pump to break up agglomerated calcine.

A Denver mineral jig and a Denver unit flotation cell in the ball mill classifier circuit remove over 60 percent of the lead, 40 percent of the silver, and 70 percent of the gold in a Colorado mill.





A 16- by 24-in. Duplex Denver mineral jig recovers oxidized and sulphide lead in a fluorspar flotation plant in Illinois.

This operator is checking the pulp density of the discharge of the 6-in. Triplex Denver adjustable stroke diaphragm pumps in a Pennsylvania coal flotation plant with a Denver pulp density scale.

to be reclaimed, it is generally better to re-use this reclaimed water in the grinding, classification, and rougher flotation circuits. Then the limited quantity of fresh water may be used for sprays and dilution in the cleaner circuits, where it does the most good. This practice is gradually becoming appreciated as it has meant the difference between success and failure in many a complex flotation problem.

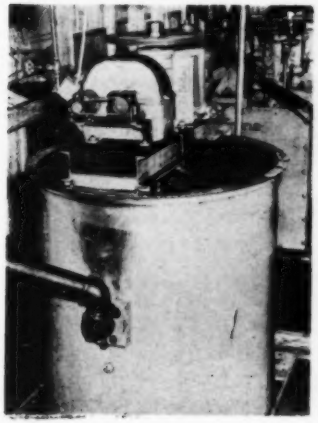
Water used for milling must always be considered when selecting equipment. Sea water, for instance, is corrosive to ordinary steel and iron parts, and it is therefore desirable to specify special alloys for this service. Mill water may also be corrosive due to acids and other salts and may necessitate special materials of construction if it is not practical to counteract this condition by chemical methods.

Dilution of Pulp Most ores float more readily at a high pulp density particularly when floating coarse sulphide minerals, oxides, carbonates, and nonmetallics.

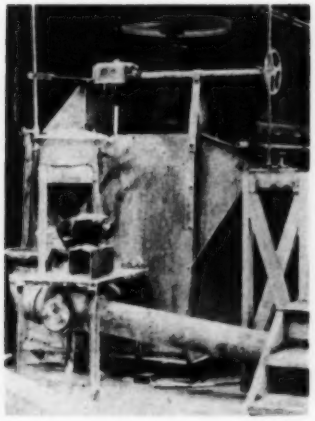
It is quite obvious that the coarser the mineral to be floated, the denser the pulp should be, as the buoyant effect is more pronounced and assists in raising the mineral-laden bubble to the surface. Here, again, mechanical flotation machines, preferably supercharged with low-pressure air, are best suited to cope with densities 1½ to 1 and higher. The ratio of slime to sand in a pulp limits the optimum density, and in general, the less the slime content, the higher density permissible for satisfactory flotation.

Flotation machine capacity is usually proportional to pulp density

Below: A No. 12 Denver reagent feeder is mounted on the superstructure of a Denver agitator and conditioner. At the right, a 6-in. Denver cone type dry reagent feeder



adds reagents to a Denver "Sub-A" flotation machine. Center: A sample set of reagents, a Denver Vanning plaque, and a Denver Alkacid tester.



LaMotte pH color standards and electric pH meters are available for accurate laboratory and mill control.

and the amount of mineral to be removed in the froth concentrate. It is therefore always desirable to float at the highest density possible, at least in the rougher circuit, where large volumes of pulp must be handled. On low-ratio ores in which the mineral content to be floated is high, it is sometimes more desirable to split the feed to two or more cells in a circuit in order to equalize the load and keep density more uniform throughout the entire circuit. Removal of low-density middlings and tailings followed by thickening and further flotation has definitely shown that recovery and grade can be kept at a high level, particularly on certain nonmetallics such as coal and fluorspar.

While higher densities are better for rougher circuits, a slightly lower density is usually desirable in cleaner circuits. Selectivity is improved in this way, and final concentrate grade can be kept at the maximum. Too much water is sometimes added to rougher concentrates in order to pump or elevate them to the cleaner machine, and as the cleaner tails usually pass into the rougher cells, high dilution results. The gravity method of circulating rougher concentrates and middlings in the same machine is most preferable for practically no dilution occurs.

Regularly checking pulp density is most important, for in addition to its effect upon flotation, density is directly related to grinding efficiently and the product overflowing the classifier. Automatic density controllers and indicators are advisable in all large mill circuits, not only in the grinding circuit, but at other points if close density control is a factor in overall recovery.

pH Control When feasible to do so, it is usually more desirable to float in an alkaline or neutral circuit. Low pH or acid circuits usually require specially constructed equipment to withstand the corrosive action of the pulp, and it is often difficult to counteract this condition due to soluble salts which form by the reaction of the ore with the acid reagent.

In many separations the secret of success lies in controlling pH within very narrow limits. This is particularly important in selective or differential flotation, as for example in lead-zinc operations. Certain nonmetallic ores must be treated in highly acid circuits in order to make the desired separation between silicate minerals which would otherwise have about the same degree of flotability. In flotation circuits making two or more separations it is usually necessary to use a different pH range for each step. This, of course, makes it vitally important to regulate reagents to bring about these conditions and control them accurately.

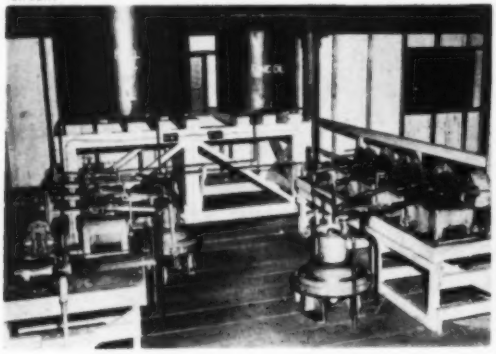
Control of pH is considered one of the routine operating controls in all modern milling plants. Either color standards or electric methods of measurement may be used. Automatic pH regulation, in which an electric pH meter is electrically coupled to the reagent feeding system, in some of the larger installations, has definitely improved overall metallurgy and simplified mill operation.

Reagents Each ore is a problem in itself, and even though assistance may be obtained from a neighboring operation treating a similar appearing ore, it is usually necessary and always good insurance to work out the reagent requirements through careful test work and plant analysis. Even ores from the same mine may have to be carefully sorted or blended to secure the best metallurgical results by flotation. Uniform or controlled feed of ore permits closely regulated reagent feed giving maximum results by flotation.

The points in the circuit at which reagents are to be added is important and should always be given considerable study. In selective flotation of lead and zinc sulphides, alkalinity regulators and zinc depressants are nearly always added to the ball mill: promoters and frothers for lead flotation are added just prior to introducing the pulp into the flotation machine. The same general procedure follows in the zinc circuit for activation and flotation of the zinc mineral, sphalerite. Although it is usually the practice to add lime first, then copper sulphate, ahead of zinc flotation, cases are known in which reversing this procedure resulted in better metallurgy. Here again, laboratory testwork points the way to the best recovery method.

Stage addition of reagents often results in higher recovery at lower reagent cost than would otherwise be the case if all reagents were added, say to the conditioner or first flotation cell. The first 75 percent of the mineral in general is easily floated, but often the last 25 percent requires

Denver (Lewers type) wet reagent distributors, mounted on the floor, permit stage addition of reagents to various points in a flotation circuit.



Reagents are being "stage added" into the cell partition of this Denver "Sub-A" flotation machine recovering lead in a Colorado lead-zinc plant.

careful treatment, best secured by the addition and conditioning of reagents in necessary quantities in the various cells in series. Mechanical agitation in the flotation machine proves very effective in giving intimate contact between the reagents and the pulp, with a natural reduction in cost and amount of reagent required through this efficient emulsification. This condition is not so pronounced in pneumatic machines. Mechanical machines with controlled circulation and aeration insure maximum recovery and grade at a lower reagent cost.

Reagent feeders are becoming more and more important in the accurate control and feeding of reagents. Accurate control of reagents is necessary as even extremely small quantities in excess of actual requirements may prove harmful, particularly in selective and differential flotation separations.

A step forward in improving flotation recoveries and in keeping reagent costs low is proper emulsification of reagents before their introduction into the conditioner or flotation circuit. This applies to nonmetallic as well as sulphide and oxide flotation. Mixing a reagent with water in an emulsifier under controlled conditions as to alkalinity or acidity and temperature, then stage adding it to the circuit by means of a reagent distributor should be considered in this respect. This practice is being applied more and more with good results by many of the more modern flotation operations.

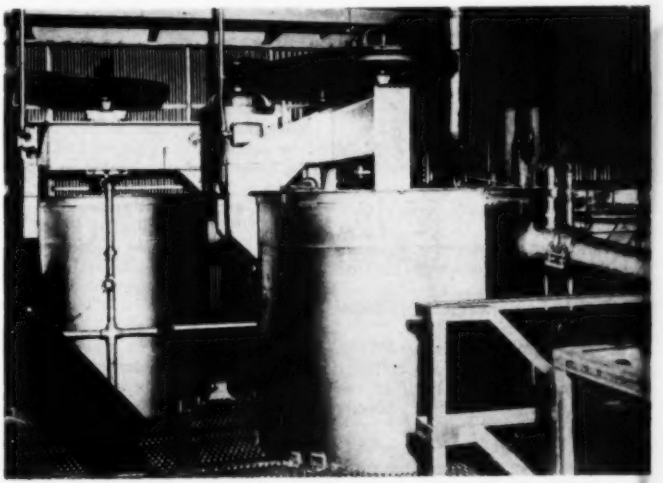
Conditioning of Pulp In flotation the amount of agitation and the time required for proper physical contact and chemical reactions are important factors. Conditioning ahead of flotation is now considered standard practice and is an important factor in decreasing flotation time for a given operation. This is perhaps the most economical way of increasing capacity of a flotation circuit. The minerals are put in readily flotable form as a result of proper conditioning, and therefore a greater volume can be treated. Although it is possible to condition in a flotation machine, it is generally not economical to do so.

Controlled agitation or conditioning for a predetermined period is really more than just mixing or stirring in an open tank with a conventional rotating propeller. It is controlling the pulp circulation, the amount of air introduced, and the thorough dispersion of reagents. All of these factors have a definite effect on how the mineral will respond to subsequent flotation treatment.

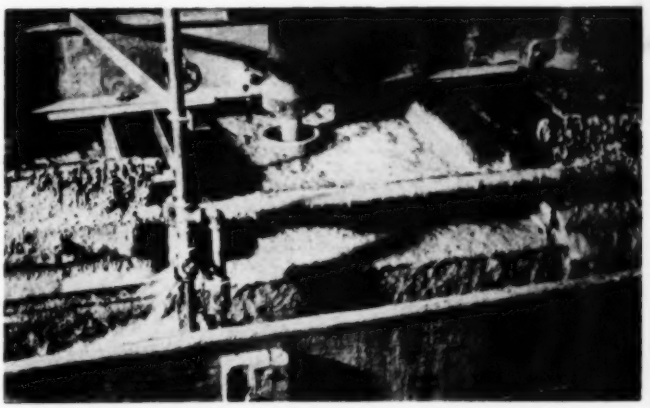
Agitators and conditioners have been contributing factors in the successful handling of many a difficult ore by the flotation process. Although pulps are usually conditioned and floated at the same density, it is worth while to investigate the effect of varying the density factor. This is particularly so in nonmetallic flotation, as it is quite common to agitate at 60 to 70 percent solids and then dilute to the required density for flotation. High-density conditioning has solved many a difficult flotation problem. Cleaner middlings or scavenger products are sometimes recirculated to the conditioner and thereby prepared for another pass through flotation. These procedures may result in higher recoveries not otherwise obtainable.

Temperature of Pulp Flotation pulps are normally handled at a temperature of 12 to 20 deg. C. In many cases, however, flotation is more positive if the pulp temperature is increased. This has long been considered a benefit in zinc flotation and in the flotation of fluorspar. Warm solutions require a smaller amount of reagents and give quick chemical and physical reactions. This is very noticeable in selective and differential flotation separations, particularly if the flotability difference between the minerals is

(*Continued on page* 131)



Reagents are thoroughly dispersed throughout the pulp ahead of flotation in these 5- by 5-ft. Denver Special Super-Agitators and conditioners used in a modern chemical plant in southeastern United States.



Fluorspar is being floated in this Denver "Sub-A" flotation cell at a temperature of approximately 100 deg. F.

Report on Current Labor Developments

By S. HERBERT UNTERBERGER

Industrial & Labor Economist
Washington, D. C. — Philadelphia, Pa.

another ON THE SPOT report

ALTHOUGH wage control program has been in effect for more than a year, there has been very little activity in connection with its enforcement until very recently. This does not mean that employers who have made wage increases which would be unallowable under that program will forever be immune from prosecution. The enforcement program is just beginning to get into operation, but already several employers have been faced with actions against them.

Teeth in the Law

It should be remembered that the Defense Production Act contains a very effective method for enforcing wage controls. It directs the President to prescribe the extent to which any wage and salary payments made in contravention of wage stabilization laws shall be disregarded by the executive departments and the other governmental agencies in determining the cost or expenses of any employer for the purposes of any law or regulation.

The President has delegated his authority in this regard to the Wage Stabilization Board. That Board now has authority to determine amounts which may be disallowed for the purposes of:

1. Calculating deductions under the income tax law
2. Determining reimbursable costs or expenses under any contract made by or on behalf of the United States, either directly or indirectly, and
3. In the establishment or approving of any maximum price ceilings.

Under the legislation, the Wage Stabilization Board is permitted to disallow the entire amount of compensation payments involving over-ceiling payments, not merely the amount representing the increase made in wages or salaries in contravention of stabilization regulations. The Wage Stabilization Board, however, is provided some discretion in this matter. Where it finds extenuating or mitigating circumstances, it may certify for disallowance an amount less than the entire amount of wage and salary payments. Also, it may determine the particular government agency which shall disallow the amount. Once the Wage Stabilization Board has determined the amount which it will certify for disallowance, other governmental agencies, such as the Bureau of Internal Revenue or the Defense Department, are bound by that amount. They may not further change it on their own accord.

Penalties Constitutional

Any employer who believes that he may be able to avoid the severity of this penalty by extensive court action should be disabused of that notion. That was tried in World War II and failed. Almost the same authority was available to the War Labor Board at that time for disallowing over-ceiling payments. When, under the World War II stabilization program, the constitutionality of that provision was challenged, it was upheld by a Federal District Court. Most lawyers believe that the Federal Courts would come to the same conclusion in connection with the present provision, and they find no reason to believe that the ruling of the District Court will be overturned if appealed to higher levels.

Cases Already Decided

The Wage Stabilization Board has publicized four cases involving disallowances which illustrate pretty well the general approach that they are taking.

One of them involved a construction company which was found to have paid bricklayers $3 per hour in an area where the lawful rate was $2.75 per hour. During the period in question, the bricklayers were paid a total of $116,000, of which approximately $9700 represented over-ceiling payments. When the company appeared before the Wage Stabilization Board's Enforcement Commission, it offered as mitigating circumstances the fact that it was working on a Veteran's Administration hospital, which had to be completed within a prescribed time, and that they were having difficulty recruiting bricklayers. They also pointed to the fact that they had talked the matter over with the local Wage & Hour Division, although the evidence indicated that there had been some lack of understanding of all of the facts in that conversation.

The Enforcement Commission stated flatly that the fact that the company was under pressure to complete the hospital was no excuse for violating the wage stabilization regulations. If, in fact, the hospital facilities were desperately needed, there was an avenue for them to come to the Wage Stabilization Board and receive special treatment. They pointed out that the company could have petitioned the Board, demonstrating that their case was "rare and unusual". Such cases receive expedited procedure. The Enforcement Commission also pointed out that this was a large company, which had its principal offices in Washington, D. C. For that reason, it was unlikely that it was uninformed about wage controls. In this, there was some suggestion that if it were a small company, located in some obscure place where the lines of communication are not too effective, the Board might have regarded this fact as an additional mitigating circumstance. The end result was that the Board did not disallow the total $116,000. It did, however, disallow $40,000, both as a tax deduction and as an expense for which they could not be reimbursed by the Veteran's Administration.

In another case, an employer who admitted that he was aware of the stabilization program at the time he made some raises, nevertheless made them quickly without considering fully what would be allowable under the regulations. As a consequence, it was found that he had paid wages equaling $3562, of which $269 was in excess of that permitted under the stabilization regulation. When this violation was discovered, he immediately rolled back his wages. The Enforcement Commission took into account his good faith in cooperating with them. Therefore, they did not disallow the total $3562, but came to the conclusion that an appropriate amount would be twice the excess payments. Thus, for income tax purposes, he was prevented from considering some $537 as an appropriate tax deduction.

In another case an employer was disallowed only the precise amount of the excess payments. In that case the employer's ignorance of the stabilization restrictions in force at the time the raise was granted—very early in the stabilization program—was regarded as the mitigating circumstance. Finally, there are some cases, where violations occur, but are forgiven by the Enforcement Commission. This is a rare situation, but it would occur where an employer made an unintentional error at a time when it was difficult to get any firm information about the application of the Wage Stabilization rules.

(*Continued on page* 131)

Texas Oil Boom Creates Vast Market For Sand and Gravel

By WILLIAM M. AVERY

• One of the 12-cu. yd. wagons, drawn by a diesel-powered wheel tractor, receives material from the bed of the Colorado River to supply the Cactus Sand & Gravel Company's plant near Snyder, Tex. The dragline mounts a ⅝-cu. yd. bucket.

another ON THE SPOT report

Branch Operation of Minnesota Firm Supplies Badly Needed Aggregates.

ALTHOUGH he would be the first to concede that oil itself is an indispensable ingredient of an oil boom, F. J. Crow of the Cactus Sand and Gravel Company believes that construction materials in general and aggregates in particular are of almost equal importance in the ultimate development of an oil boom area. Mr. Crow, who is part owner of the Deutz & Crow Sand and Gravel Company of Marshall, Minn., was on a vacation trip to his home state of Texas two winters ago when chance took him thrugh Snyder, one of the lustiest of the post-war crop of Texas oil boom towns. Noting the tremendous amount of construction activity in the town itself as well as in the surrounding locality, he persuaded his partners, Hubert Deutz and Bruce Olson, that a sand-and-gravel operation in the area might prove to be a profitable venture.

The three men returned to Snyder to look for suitable deposits of material. Excellent sand and gravel was found to be available in a series of bars in the bed of the Colorado River about 14 miles north of Snyder, and the Minnesota group formed a corporation with the owner of the leases, a Texan named W. W. Porter. A suitable 15-acre plant site was selected in the approximate center of the deposits, and entirely new equipment was purchased in preparation for large-scale operations.

The sand bars are spread over about six miles of river bed. There is no overburden, and the depth runs about 8 ft. The bars average approximately 40,000 cu. yd. each, and the material runs about 60 percent gravel (retained on ¼-in. and passing 1½-in.) and 40 percent sand.

The material varies somewhat from one pocket to another, but it is generally quite clean. Most of it lies over clay, and inevitably at times some of the clay is picked up and loaded, but since the plant is set up as a washing operation, this doesn't present any serious problem.

Building and maintaining roads for the haulage units is probably the toughest job in connection with recovery work. The roadways are built by digging out the bank dirt and replacing it with caliche and stable clay. Since the river may rise as much as 35 ft. under extreme conditions, it is not uncommon for haulage roadways to be completely destroyed. For this reason every effort is made to work the bars systematically, and to stay at a particular location until all the desirable material has been recovered.

The bars are worked with a Bucyrus-Erie 15-B dragline equipped with a Hendrix ⅝-cu. yd. bucket. Two Caterpillar diesel DW10 wheel tractors, pulling W10 wagons, handle most of the haulage work,

• A view of the screening and washing plant and the truck-loading bins. A 10- by 20-in. jaw crusher has been installed since this photograph was taken.

● Franklin J. Crow, part owner of the parent organization (Deutz & Crow Sand & Gravel Co.), heads up the subsidiary operation. His small friend, lurking behind the outsize goggles, is Bill Avery Jr.

● One of the two front-end loaders used for feeding the 10-cu. yd. hopper, from which the screening plant is in turn fed by an inclined belt conveyor.

but three conventional dump trucks are also available for use on the maximum haul. The W10 wagons haul about 12 cu. yd. of material per trip.

When the water in the river is high enough to cover the sand bars, the dragline is moved back about 150 yards from the bank to recover material from the so-called "hogbacks" which abound in the area. These are just small hills of sand and gravel, ranging from 4 to 12 ft. in depth, from 10 to 12 ft. in width, and up to 50 ft. in length. Although material from the "hogbacks" is entirely suitable, the river bed deposits are preferred because they contain a larger proportion of coarse aggregate, and because the sand is of a somewhat lighter shade.

The plant proper is a Pioneer 305-W installation which is operated entirely on purchased power. The haulage units stockpile material in front of the plant at the maximum rate of 650 cu. yd. per day, and a 10-cu. yd. receiving hopper is fed from this source by means of an Allis-Chalmers HD5G front-end loader, a Trojan front-end loader, or an HD-7 bulldozer. As originally set up, the plant was equipped only for washing and screening, but since the accompanying photographs were taken, a 10-by 20-in. Pioneer jaw crusher has been installed. This unit is set up beyond the original 305-W plant, and it operates in closed-circuit with a vibrating screen. This change has jumped capacity from an initial 450 cu. yd. to approximately 600 cu. yd. per day.

A 500-g.p.m. pump located on a float down river from the plant supplies water for washing. The plant regularly produces mason's sand, concrete sand, ⅜-in. pea rock, ¾-in. rock, and 2-in. rock, and other special sizes can be made for specific jobs by changing the screens. Although delivery trucks are loaded directly from the plant bins whenever it is possible to do so, a good share of all the material produced is trucked to an extensive stockpiling area adjacent to the plant. Some rehandling is avoided by means of a separate 2-compartment truck-loading bin which is fed by means of a Pioneer bucket elevator. Delivery trucks are loaded from the stockpiles by means of the two front-end loaders previously mentioned and by a Barber-Greene 82-A bucket loader.

Under the impact of the oil boom the nearby town of Snyder has grown almost overnight from a sleepy village of some 2,500 people to a bustling young metropolis of almost 20,000. Three ready-mixed-concrete plants, two of which are supplied by Cactus Sand & Gravel, work day and night to keep up with the demand for construction materials.

Although the average length of haul is not much over 40 miles, some orders are trucked as far as 120 miles from the plant. With this wide area to draw upon, the company's open market sales run from 250 to 300 cu. yd. of material every day. Most of the delivery haulage is handled on a contract basis, and cable-dump trailers are used to a large extent. One 15-cu. yd. unit regularly hauls to a dealer in Midland, over 70 miles from the plant.

A seven-man crew operates the plant under the supervision of F. J. Crow. Operations are on the basis of a ten-hour day six days per week, and for the year around the property averages 22 working days per month.

● Additional screening and truck-loading capacity is provided by this separate installation in the storage yard.

Information on the Spanish Cement Industry

By JULIAN REZOLA
Cementos Rezola, S. A.
San Sebastian, Spain

another P-Q exclusive

SPANISH manufacturers of cement can count at the present time on two organizations for the defense of their interests and for the solutions of technical questions relating to cement and its applications. These organizations are La Agrupacion de Fabricantes de Cemento Portland (The Society of Manufacturers of Portland Cement), founded about 25 years ago to defend the economic interests of the Society, and El Instituto de La Construccion y Del Cemento (The Institute of Construction and Cement), founded in 1947 as The Institute of Cement, and annexed in 1949 to the already existing Institute of Construction, composed of representatives of the state, leaders in the cement industry, manufacturers, and contractors who are large consumers of cement.

The work of the Instituto has been divided into different sections dealing with architecture, technology of construction, structures and foundations, processes of construction, materials, cost, processes of work, etc. Its objectives are to undertake technical and industrial investigations; to develop staffs exclusively dedicated to the work of the Instituto; to compile an abundant bibliography; and to publish everything of interest on cement. In order to carry out this task, it counts on the installation of laboratories, both of a scientific and an industrial nature, and the help of plant laboratories to carry out all such work as cannot be done by those factories lacking such equipment. The organization of the Instituto is divided into two large branches: investigations and laboratories, and bibliography, the latter subdivided in its section of library, publications, and information.

Having carried out, as its first task in the field of general investigations, the selection of problems worked out in other countries, its work at present is principally directed to expanding its activities and constructing a pilot plant. The great evolution in cement-making machinery has been

Julian Rezola

of such a nature that the project for the installation of the pilot plant has become indispensable to the element of trial in assisting manufacturers in their task of transforming their installations to secure greater economy and improvement in the quality of their products, as well as putting their raw materials to the best possible use.

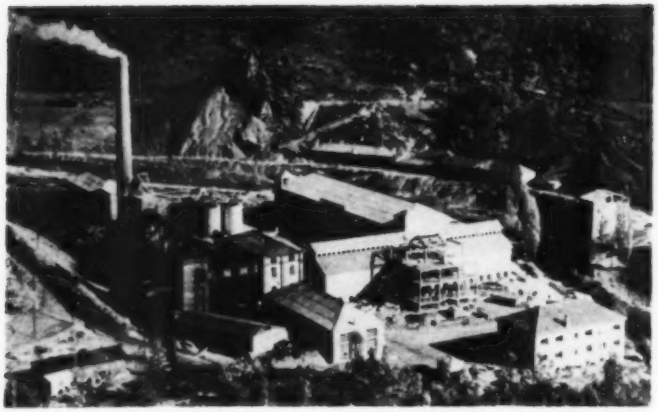
The numerous objectives in view include the carrying out of tests of raw materials: "shlams" coals, which have not yet been studied and specially considered in Spain; and many others which can be made with an installation of this type. Such objectives are directed towards the selection of the proper machinery in each case for the treatment of the respective materials, the provision of the proper proportions of agglomerates and aggregations, the basis of investigations of a scientific nature, and of the applications which will subsequently be the objective of the Instituto's plan of work. If manufacturers of machinery continue to give their advice to the cement producers, no doubt the field of proper experimentation afforded by the pilot plant will lead to a more practical selection.

The second large branch of the activities of the Institute—bibliography—is in charge of the sections of library, reviews, publications, card indexes, and service of information. The operation of this branch is handled by technicians whose work is the compilation and publication of themes and works to be placed at the disposal of manufacturers, issued in two reviews now being published: *Informes de la Construccion* and *Ultimos Avances en Materiales de Construccion,* and in the bulletin. *Ultimos Avances de Edificacion.*

Theoretical Capacity and Production Attained

During the year 1950 the Spanish cement industry was able to reach its highest rate of production, a total of 2,103,102 metric tons. The production of clinker in 1950 totaled 1,999,399 tons, representing an in-

A panoramic view of the facilities of Cementos Rezola, S. A., San Sebastian, Spain.



A general view of the new plant of Empresa Nacional Hidroelectrica del Ribagorzana.

crease, compared with 1949 and 1948, of 232,602 and 325,376 tons, respectively. The production of artificial portland cement was 1,933,784 tons in 1950, as compared with 1,695,953 tons in 1949 and 1,648,693 tons in 1948. The production of artificial cement other than portland was 169,318 tons in 1950, a figure slightly above that obtained in 1949.

The largest annual production was attained by the firm, Cementos Rezola, S.A., with 182,483 tons, and second place went to Cementos Portland, S.A., with 155,818 tons. The remainder of the production was distributed between the other 33 plants.

The production of portland cement in 1950 would have reached 2,000,000 tons, a figure exceeding that of the sales, if there had been sufficient electrical power available for milling and grinding. This scarcity of power, due to these last years of exceptional drought, has left some plants in possession of excessive quantities of clinker, which will be converted into cement as soon as the necessary electric power is available. However, it must be noted that, although there is a possibility of exceeding the above figure, which represents about 70 percent of capacity, the results may be considered satisfactory, taking into consideration the antiquity of some of the installations and the lack of replacements to repair them thoroughly. The handicaps of undesirable and inappropriate equipment are due to the material difficulties caused by the late Spanish civil war, and the following world conflagration, which resulted in a scarcity of elements. The shortages are now slowly disappearing by reason of either construction in Spain or importation of materials and parts.

Principal Improvements and Expansions of Plants

The most important improvement and expansions carried out in plants include the inauguration of new kilns in the following: Cementos Alfa, S.A., and Tudela-Veguin, C.A., wet process; Sdad. Financiera y Minera, Industrias del Cemento, S.L., and Materiales Hidraulicos Griffi, S.A., dry process. Other new kilns are in operation at the following plants: Cementos Portland Morata de Jalon, S.A., and Portland Valderrivas, C.M.A., wet process; Sociedad Española de Cementos Portland, Cementos Turia, and La Auxiliar de la Construccion, S.A., dry process.

The following plants propose improving the present milling and transport installations: Cementos Molins, S.A.; Industrias del Cemento, S.A.; La Auxiliar de la Construccion, S.A.; and Cementos Rezola, S.A. The latter has also set to work its installations for the electrostatic removal of dust. A new electrical central has been installed by Cementos Portland de Lemona, S.A., and new thermic centrals by the Materiales Hidraulicos Griffi, S.A. (with the recuperation of smoke), and La Auxiliar de la Construccion, S.A., the latter having also completed an installation to produce natural cement. Great activity is to be observed in almost all Spanish plants in expansion programs for improving the exploitation of their quarries by extending their installations of crushing, transport, erection of silos, and other improvements.

New Plants Under Construction

The government has thought it advisable to grant authorization for the installation of new plants, the construction of a number of which is in a more or less advanced state. Of these, an important one is the plant of Cementos Hontoria, S.A., a joint venture of Iberduero, S.A., Cementos Portland, S.A., and Cementos Rezola, S.A. It will attend to the necessities of an ample Castilian plateau, a zone which has but scant deposits of limestone of suitable quality. The plant is situated in Venta de Baños (Palencia), and will use the wet process. Its capacity is fixed at 120,000 tons per year. The following are other plants recently built or in the process of construction: Carbones de Berga, Hidro-

An air view of the new plant of Hidrografica del Guadalquivir.

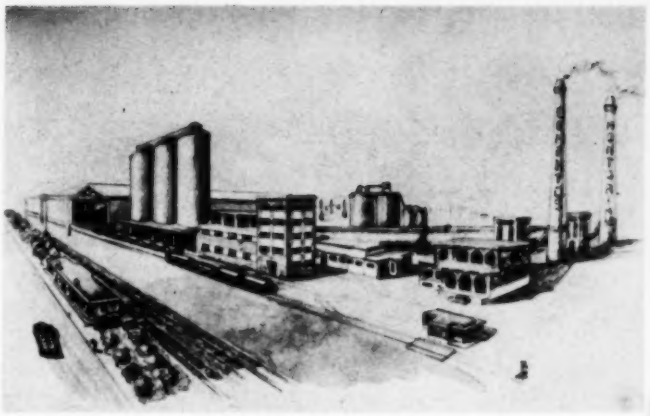
grafica del Guadalquivir, Monasterio de Arbas, Cementos de Fuerteventura, Cementos Marroquies, Sociedad Altos Hornos de Vizcaya, Sociedad Metalurgica Duro-Felguera, Empresa Nacional Hidroelectrica del Ribagorzana, and Fuerzas Electricas del Segra. A considerable number of companies have also asked for permission to set up new plants or to extend existing ones, these petitions being at present pending resolution.

Some plants are extending and renovating their machinery. Others are moving some of their installations to other plants which are better situated from the market point of view, or installing them near large hydraulic works, for which they are exclusively destined. In some cases producers supply clinker and later grind it at installations erected nearby. This is the case of the firm Iberduero, S.A., of Bilbao.

American Machinery in Spain

Among the Spanish cement works which have American machinery in their installations is Asland in its La Pobla and Moncada plants. These are partly equipped with Allis-Chalmers machinery for the construction of large electrical centrals in the Catalan Pyrenees. The Sanson company uses Traylor machinery. Since the year 1930, eight Fuller pumps have been installed, and the Fuller Company has numerous orders on hand for more, as well as for air-quenching, inclined-grate coolers.

At present the principal drawback experienced by manufacturers in acquiring machinery is the difficulty in obtaining an importation license



Artist's sketch of the proposed works of Cementos Hontoria, S.A.

and the present high price of the American dollar. Apart from the proper machinery for cement, there exists a considerable amount of other American machinery — excavators, compressors, drills, tractors, lorries, and other units.

Special Cements

Two Spanish companies make white cement. The principle followed in Spain is that of manufacturing the clinker itself for all purposes and later adding such materials as are necessary to bring about an improvement in a determined sense. That is to say, as in the United States, the clinker is manufactured bearing in mind its ultimate application, but in Spain the criterion is the adding of materials like the slag of blast furnaces. However, there can be no doubt that there are some manufacturers who are convinced of the necessity to produce clinker with its own characteristics for use, as in the United States, by improving it by the addition of suitable substances, after having made a number of trials in this direction. This is an aspect which will be the subject of study by the Instituto de La Construccion y del Cemento and by the manufacturers of cement, although it presents a problem which has its difficulties, either because factories do not have adequate raw materials, or because their present installations do not permit their use. It must be borne in mind that Spain is a relatively poor country, and that her plants in general do not have at their disposal as powerful mechanical means as has the United States.

Factors Affecting Flotation

(*From page* 125)

not pronounced. Air and water temperatures have a bearing on flotation results, and the temperature of the latter in particular should be watched, especially in cleaner circuits where it may be employed as sprays and for dilution.

Too high a pulp temperature may have the same adverse effect as cold pulps in certain types of metallic and nonmetallic flotation. Careful tests are always desirable in determining optimum temperature conditions. Maintaining a certain definite temperature in flotation may be just as important as pH and pulp density controls in the regulation of a mill circuit. High temperatures even up to boiling and sometimes under steam pressure may be advantageous in altering the flotability of certain mineral, as for example, sulphur. In this case, colloidal particles are actually converted into globules of pure elemental sulphur which are readily flotable and recoverable in a high-grade product. Harmful reagents are sometimes removed by heat as in the case of steam conditioning bulk copper concentrates before differential flotation for recovery of molybdenite.

Labor Developments

(*From page* 126)

It is likely that we will hear a great deal more about the enforcement of wage stabilization. Many employers are sure to be faced with action by the government in this connection. As Wage and Hour representatives continue to make inspections of employers' payrolls, they will find some entries which appear to be violations. In some cases these can be very quickly explained. In others it may be necessary to go through more extensive and formal action. The fact that the penalties are so severe makes it essential that employers keep adequate records, so that they can explain the basis for the wage increases which they gave.

It is important to note that employers are required to keep their records for three years. Thus, the possibility of being cited extends at least that long.

If World War II experience is repeated very few employers will suffer large disallowances. Many of them, however, will have to explain their past actions to the Wage Stabilization Board's Enforcement Commission. This will be inconvenient and frequently costly because of the necessity for retaining lawyers and industrial relations consultants. The attendant adverse publicity could be serious. Avoid getting involved in this kind of situation.

personal mention

The following management changes and promotions were announced by G. K. Mitchell, executive vice-president of the New York Coal Sales Company, 150 East Broad Street, Columbus, O.:

ROBERT M. PATTON moves up to the post of vice-president in charge of operations of the parent company, its several divisions, and subsidiaries. Mr. Patton joined New York Coal Sales in 1941, was given a leave of absence to serve with the Armed Forces, and returned at the end of World War II to assume the responsibilities of assistant executive vice-president. Earlier this year he was named president of the National Agricultural Limestone Association.

CLARENCE M. SHAW, formerly sales manager of the Superior Cement Division, now is assistant executive vice-president in charge of sales and public relations. His offices will be in Chillicothe, and Mr. Patton will headquarter in Columbus.

WILLIAM B. CARDER has been advanced from the cement sales staff to replace Mr. Shaw as sales manager. His office will be in Portsmouth, home of the Superior plant, which also produces Wifco mortar cement.

For the Basic Construction Materials Division in Chillicothe, W. A. RODGERS is sales manager for both Chillicothe and Circleville, with production concentrated on concrete block, ready-mixed concrete, and sand-gravel. Basic also handles a complete line of building materials. Mr. Patton serves as Basic vice-president, and Mr. Shaw is assistant executive vice-president.

In other subsidiaries PAUL ALLEN is manager of the New York Coal Company; R. E. ROGERS is director of sales for New York Coal Sales; V. K. GAMBLE is general manager of the Southern Quarries and Contracting Division; and LEO L. DAVIS is manager of the Plum Run and Highland Stone Divisions.

CARROLL E. ALDRICH, who formerly served as plant engineer, has been appointed assistant plant manager at the Duluth plant of the Universal Atlas Cement Company, New York, N. Y.

Mr. Aldrich was employed by Universal as turn chemist at the company's Duluth plant in 1946, and later the same year he was promoted to chemist. In 1948 he was transferred to the company's Leeds, Ala., plant as assistant technician, and was promoted to general operating foreman in 1950. In 1951 he returned to Duluth as plant engineer, a position he held until his present appointment.

J. O. EBY, underground mine superintendent, has been appointed Jeffrey mine manager, John-Manville Corporation, Asbestos, Que., Canada He succeeds Karl V. Lindell, who is general manager of the asbestos fiber division, and vice-president of the Canadian Johns-Manville Company.

R. B. MENKE of New York was re-elected president and chairman of the board of directors of the Menke Stone and Lime Company, Quincy, Ill., at the annual meeting of the firm on January 2 in company offices.

Other officers re-appointed include A. L. BITTER, executive vice-president, and E. H. SIEBRASSE, secretary-treasurer. Upon recommendation of the board, TOM HELMS was elected assistant secretary, and MISS ROXINE REEDER was named comptroller.

Three personnel changes in its sales department have been announced by Harbison-Walker Refractories Company.

H. G. HART, formerly of the Portsmouth, O., sales district, has been transferred to the new specialties and retail department, Pittsburgh; FLOYD A. PEARCE, formerly of the Pittsburgh sales district, has been transferred to Portsmouth to replace Mr. Hart; and E. A. OLSON has been appointed to the Pittsburgh sales district as a replacement for Mr. Pearce

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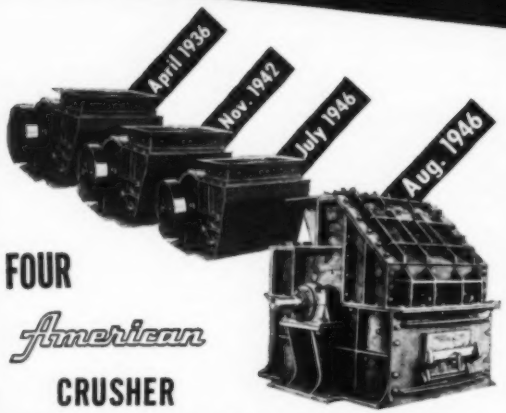

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JOHN W. MEADER, economist for Great Lakes Carbon Corporation, New York, N. Y., has been elected assistant vice-president of the corporation, it was announced recently.

Mr. Meader is the author of numerous articles on engineering and economic subjects. He served from 1941 to 1945 as consultant in the U.S. Bureau of Aeronautics in aircraft production, weapons development, and operations analysis. He also was economist for the New York Trust Company for ten years prior to 1941. He is a graduate of Massachusetts Institute of Technology.

D. M. CLIPPINGER is now on the staff of the Pumice Corporation of America at Grants, N. M. Prior to this position he was a mining engineer for the New Mexico Bureau of Mines and Mineral Resources at Socorro.

ROBERT YOUTZ has been named quarry engineer for the United States Gypsum Company at Southard, Okla. He was formerly associated with the Resurrection Mining Company, Leadville, Colo.

S. D. MICHAELSON, who was formerly a chief engineer, coal mines, for the Tennessee Coal, Iron & R.R. Company (a U. S. Steel Company subsidiary) in Birmingham, Ala., has been named chief engineer for raw materials for the firm. He is also a vice-chairman of the Minerals Beneficiation Division of the American Institute of Mining and Metallurgical Engineers.

R. H. MILLS has been named refinery superintendent and L. A. TILLOTSON, chief chemist at the United States Potash Company's operation at Carlsbad, N. M.

H. H. LAUER, consulting industrial and cement plant engineer, recently moved his office from Philadelphia, Pa., to Orlando, Fla.

JOHN W. ROCKWOOD, who joined the Kelley Island Lime and Transport Company, Cleveland, O., in 1946, has been appointed general sales manager. He suceeds F. J. Collins, who was recently promoted to vice-president.

Mr. Rockwood, who formerly served as manager of building sales, was connected with U. S. Gypsum Company of Chicago prior to World War II.

JACOB R. SENSIBAR, president of Construction Aggregates Corporation, Chicago, Ill., was featured recently in the *Chicago Tribune* series of articles on "How Men at the Top Won Their Place".

Figuring in the article on Mr. Sensibar are his early years on an Indiana farm, his early work in the sand business with his father, his working out of a satisfactory method of filling in the lake for land reclamation, a field in which he is considered an expert, and his work in regaining control of Construction Aggregates Corp., after the depression put it in the hands of creditors.

Among other executives featured in

the series was LOUIS WARE of the International Minerals and Chemical Corporation.

R. A. CHYNOWETH has been appointed staff manager of the government service department in Chicago of the Johns-Manville Corporation, New York. He succeeds L. L. BERGENDAHL, who has been transferred to the company's Van Cleef division as assistant general sales manager.

Mr. Chynoweth joined Johns-Manville in 1916 as a sales representative. In his new capacity he will consult and advise with federal and state government officials in 12 states on defense production.

PHILIP T. SHARPLES, chairman of the board and former president of the Sharples Corporation and Sharples Chemicals, Inc., and president of the Sharples Oil Company, has been elected to the board of directors of the Pennsylvania Salt Manufacturing Company, Philadelphia.

GAIL HAMILTON has been promoted from assistant sales manager to sales manager of the Ash Grove Lime and Portland Cement Company, Kansas City, Mo., according to an announcement by Purd B. Wright, general sales manager of the firm. Mr. Hamilton has served Ash Grove for nine years.

MELVIN H. BAKER, chairman of the board of the National Gypsum Company, Buffalo, N. Y., has been elected a director of the National Association of Manufacturers for 1952, according to announcement by H. C. Ramsey, president of the Worthington Pump and Machinery Corporation, Harrison, N. J., and regional vice-president of the N.A.M.

LLOYD W. GRAGG has been appointed traffic manager of Kaiser Gypsum, a division of Kaiser Industries, Inc., Oakland, Calif. He succeeds Jay Barbeau, who has resigned.

ROBERT MITCHELL, president of Consolidated Rock Products, Inc., Los Angeles, Calif., was recently re-elected president of the Veterans Service Center.

The Potash Division of International Minerals & Chemical Corporation has expanded its Industrial Sales Department to handle the increased volume of chemical production that has resulted from the purchase of Innis, Speiden & Company in July, 1951, according to A. Norman Into, vice-president in charge of the division. Newcomers to the department's Chicago offices are CARL H. BARBER and J. A. SHEEHAN. PAUL W. HILLER and JOHN E. BATCHELDER, formerly with Innis, Speiden & Company, now sell from the department's New York City offices. Mr. Hiller is New York district manager of chemical sales. The department also has a newly-created technical service under T. E. ALLEN.

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● Portable Washing Plant

A portable washing plant that includes all of the features of the older model and includes several new ones has been announced by the Lippmann Engineering Works, 4603 W. Mitchell Street, Milwaukee 14, Wisc.

The new "Wash-More" plant includes the scrubber, double-deck screens, and sand drag that were features of the older model. Improvements in the catwalks for complete access to all parts of the machine, use of mesh screen guards instead of solid ones, and use of strengthened parts for longer, more rugged wear have been made. Capacity runs to 80 t.p.h., and the entire unit is completely mobile.

● Gear Products

A complete line of gears—spur, worm, herringbone, helical, miter, spiral-bevel, "Hypoid", and curved-tooth speed reducers and gear motors—is offered by the Philadelphia Gear Works, Erie Avenue and G Street, Philadelphia 34, Pa.

The line includes all sizes and styles of gears in a wide variety of materials for all types of service. Self-contained MotoReduceRs are available in vertical or horizontal types with speeds from 16.5 r.p.m. to 420 r.p.m., and motor speeds of 1750 r.p.m. Planetary speed reducers with ratios from 4 to 1 to 106 to 1 and sizes to 100 hp. are manufactured. Horizontal and vertical worm gear reducers, herringbone reducers in single, double, and triple reductions, and straight and right-angle drives, gearmotor, and helical

● Long Hole Drill Tools

A line of tools for drilling long holes with standard percussion rock drills is being offered by the Rock Bit Sales and Service Company, 2514 E. Cumberland Street, Philadelphia 25, Pa.

The line includes a "Tru-Seal" shank, adapters, couplings, an extension rod, and "Rok-Bit" tungsten carbide bits. The tools are made in diameters of 1⅞ in. and 3 in. They are self-cleaning and self- cooling, and the design keeps the hole in alignment and eliminates excessive vibration at maximum depth. With these tools holes can be drilled in any type of rock or ore in depths to 150 ft., and in any direction by following the manufacturer's recommendations.

● Tungsten Carbide Bits

A complete line of tungsten carbide bits for use with drill steels on wagon drills, jackhammers, stopers, and drifters has been announced by Brunner and Lay, Inc., 9300 King Street, Franklin Park, Ill.

The line of bits will be available in all standard sizes from 1¼ to 4 in. and in the four-point cross type and the two-point chisel type. Among the features of the line, which will be offered as Brunner and Lay "Rok-Bits", are full body support of the carbide inserts, balanced air hole positioning for high-efficiency blowing, accurately formed shoulder for full support by the drill steel, and internal threading of the bit to prevent bottoming of the steel in the bit.

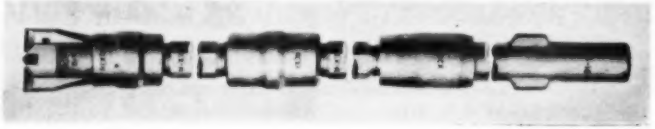
Tungsten carbide bits offer the lowest cost per foot of hole drilled and give faster drilling and longer bit life, claims the company.

● Jaw Crusher

A modification to the basic design of the "A-1" Allis-Chalmers jaw crusher has been announced—the replacing of sliding toggles with dry rolling ones. This has been done by reversing the curvatures of the toggle ends and seats and making the curvature sufficiently great. A rubber apron keeps material out of the toggle seats. As the toggle ends roll, no lubrication is necessary; and less wear occurs than with a sliding action. Savings in lubricant and labor are also accomplished.

A shear member is provided in the toggle between the pitman and frame. Non-crushable material will cause the rivets to shear off and prevent serious trouble. The rivets are easily replaced.

The "A-1" crusher is suited to handling very hard material in sizes above 18-in. ring size. Allis-Chalmers Mfg. Co., Milwaukee, Wis.



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Nopco* Chemical Company—forty years in the business of supplying industry chemicals for numerous applications, and today selling $20,000,000 worth of chemical products—now offers its new, scientifically developed air-entraining agent, NOPCO ERTRANE C.

This agent has been subjected to a series of rigid tests by the fully qualified laboratory of E. L. Conwell & Co., Philadelphia, and has met all eight requirements of Specification C226-50T.

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Nopco Ertrane C is a fully accredited air-entraining agent for use in the manufacture of air-entraining cement made in conformance with ASTM SPECIFICATION C175-50T—the specification reflecting the current policy of Committee C-1.

The results of exhaustive tests have proved conclusively that air-entraining portland cement employing Nopco Ertrane C assures concrete of good strength and excellent durability. And look at these added advantages:

EASY, ECONOMICAL HANDLING—It is only necessary to add Ertrane C to water and stir until dissolved. No control testing required. Thus considerable savings in time and labor are realized at the mill.

IMPROVED PLASTICITY—Ertrane C not only provides excellent durability and plasticity (through air formation) but imparts qualities that *increase workability and placeability.*

IMPROVED WATER REPELLENCY AND STORAGE LIFE—Owing to its composition, Ertrane C gives *more water repellency* than straight resin soaps —helps to prevent cement from caking in storage.

GOOD COST PERFORMANCE RATIO—On a cost/performance basis, Ertrane C is the *most economical* air-entraining agent on the market.

Ertrane C is immediately available, in any quantity, from Nopco's plants at Harrison, N. J., Chicago, and Cedartown, Ga.

Profit by filling out the attached coupon and getting full information about Ertrane C—the new air-entraining agent that actually surpasses the requirements of ASTM Specification C226-50T by impressive margins in virtually every instance.

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Here are good points to remember when it comes time to replace clutch and brake friction materials on your machines . . .

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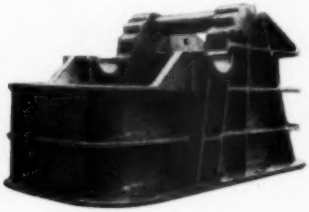
● Jaw Crusher

An improved jaw crusher, the "Sterling", which reportedly features drastic weight reduction with increased strength, has been introduced by the Bacon-Pietsch Company, 149 Broadway, New York 6, N.Y.

Among the features of the new line



are tapered bushings for ease of removing the flywheels, removable eccentric bearings, locking type swing jaw shaft, rib type "A" frame flange construction, circulating oil lubrication, and alloy steel construction.

Electronic strain gauge testing has been used to determine the proper strength for each part of the crusher without using unnecessary weight. This is claimed to have increased the strength of the parts by more than 50 percent, with a weight reduction of about 60 percent.

Sizes range from 60 by 48 in. to 10 by 7 in.

● Sectionalized Conveyor

A sectional low-head belt conveyor for underground and open pit mining and for other applications where moving or shifting is required has been developed by Transall Incorporated, 109 N. 11 Street, Birmingham 4, Ala.

A special tail section and a head section containing the tandem drive are

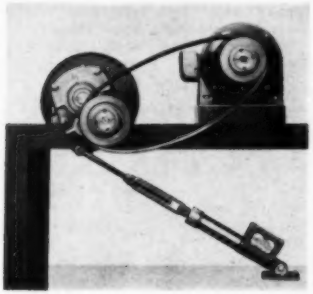
engineered to the job. The intermediate sections are standard and may be obtained in a chair-mounted or a skid-mounted design. Deck plates, idlers, and side rails may be detached from the chairs so that the entire section can be easily moved and set up. The sections are bolted at the connections so that they can conform to the contour of the ground. Head and tail sections feature rubber-covered drive pulleys, cantilevered unloading boom, telescopic belt take-up, and other features for improved operation. All sections are equipped with Transall heavy-duty prelubricated idlers. Belt widths from 24 to 36 in. are standard.

Gould-National Batteries, Inc., Trenton, N. J., has appointed George F. Walsh sales promotion manager.

● Torque-Arm Release

An overload release for the Dodge "Torque-Arm" speed reducer is available from the Dodge Manufacturing Company, Mishawaka, Ind.

The release is used in place of the regular torque-arm and when overloaded,



acts to loosen the driving belt, cut off the current, and activate a warning device. Because of the triple action it is called the "Tri-Matic" overload release.

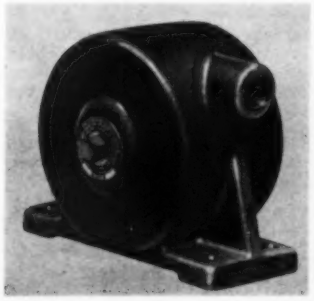
The device consists of a piston that is extended and held open by a cocking arrangement set to release at a predetermined load. When this point is reached, the piston is allowed to move lengthwise through the cylinder, which loosens the belts and actuates a switch cutting off the current. A micro switch turns on the warning device. When the overload is removed, the speed reducer is pulled back into position, cocking the release mechanism. The releases are made in all sizes to fit Torque-Arm speed reducers in single or double reduction series, and are interchangeable with the standard arms.

● Pneumatic Vibrator

A larger, pneumatically-driven vibrator has been added to the "Vibrolator" line manufactured by the Martin Engineering Company, Kewanee, Ill.

The new model, the "DV51," is designed for use on the largest bins and hoppers. This model uses a 2-in. ball weighing one lb., driven by air pressure around a hardened and ground two-rail race. The rushing of the ball around the raceway creates a powerful, but quiet, all-directional vibration.

This large model, like others in the line, is self-starting, requires no lubrication, and needs little maintenance. It can be used on all materials that are fed from bins or hoppers.



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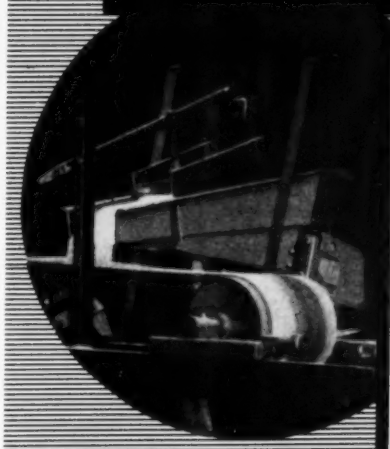

FEEDING:

Rock from dump truck to crusher . . .

Aggregate onto a belt conveyor . . .

Frit to a Bag Filler . . .

Pit Run Gravel in Primary System of a Rock Plant . . .

Clay to Pan Mill Refractory . . .

Lime from draw point of Kiln . . .

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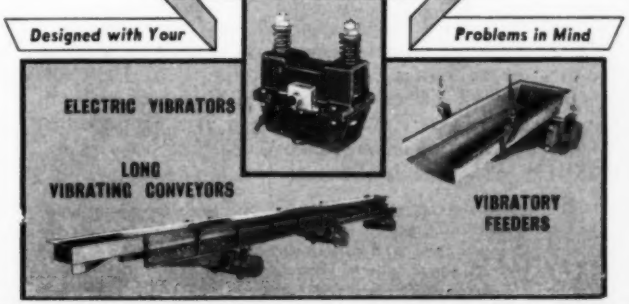

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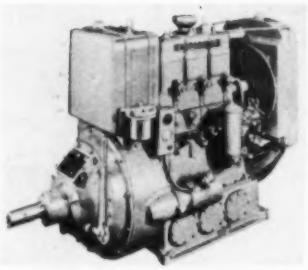
● Three-Cylinder Diesel

A three-cylinder diesel engine, rated at 30 to 54 hp., with a speed range of 1200 to 1800 r.p.m. has been announced by the Nordberg Manufacturing Company, Milwaukee 1, Wis. This unit supplements the one- and two-cylinder diesels with horsepowers from 10 to 30.

The "4FS3" is a four-cycle type with a 4½-in. bore and 5¼-in. stroke. It is a vertical, mechanical injection type. The engine comes fully set up and ready to run. It is available in three units—generator, pump, or power.

As a generator the 4FS3 is completely set up and ready to be connected to the load. Direct or alternating current models with an output of 20 to 30 kw. in all standard voltages, 50 or 60 cycle,



are available. Among suggested uses are power for large magnets, sand and gravel plants, drill rigs, and lighting service.

The pump unit has a side suction, ball-bearing, centrifugal pump. Capacity is 500 to 3000 g.p.m. at 20- to 220-ft. heads. It is designed for draining, dredging, and general pumping service.

As a power unit the 4FS3 is suggested for replacement use in hoists, small shovels, compressors, blowers, pumps, and similar uses. This style may be had with direct or clutch power take-off.

Electric or hand starting, thermostatically controlled cooling, and positive injection of strained fuel are other features. Marine units with heat changers are available.

● Motor Control Center

A motor control center for use wherever two or more a.-c. motors are controlled from a central location has been announced by General Electric, Schenectady, 5, N. Y.

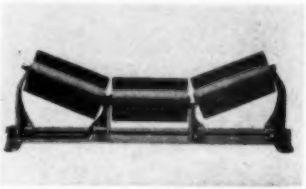
The new center is factory wired and assembled, and employs many standard

components and accessories. It provides a simplified means of installing and servicing in a central location, a.-c. combination motor starters N.E.M.A. sizes 1 through 5, as well as lighting panels and associated equipment.

The sections are 20 in. deep, 20 in. wide, and 90 in. high. They join together to form a completely dead-front enclosed assembly. A wiring trough makes inspection and servicing easy, as do the removable starter units. Many protective devices have been included for greater safety in servicing the center.

● Improved Idler

An improved idler that features a new greasing method has been developed by the Chain Belt Company, Milwaukee, Wis. The new idler has flexible automotive-type grease tubing that will take higher gun pressures, and that will not be broken off in shipment. The tubing hugs the inside of the idler base. The tubing is threaded through the base to the bearings, and the connections are placed to be more accessible.



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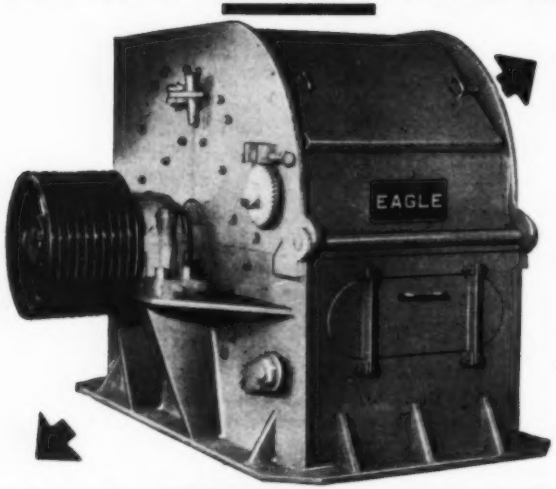

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More Information, Please

CHECK AND MAIL THE CARD BELOW FOR ADDITIONAL INFORMATION ON NEW MACHINERY AND SUPPLIES

1. Hydraulic Setting Refractories. RC-28A. A 12-page brochure that presents five different products for casting refractory shapes and three products for gunning and slap troweling. These products are made for service through 3,000 deg. F. and are handled like ordinary cements in application. Suggestions for casting or applying the materials are given while photos show typical uses and illustrate handling methods. Johns-Manville.

2. Sterling Feeders. This 4-page folder is an introduction to the standard and heavy-duty feeders of the company. Sizes, and features are pointed out and other products are listed such as crushers, screens, conveyors, etc. Bacon-Pietsch.

3. Rod Selection Guide for Anscoating. Form 451 WC. This is a wall chart 17 by 26 in. printed on a heavy paper with a lacquered surface. It has tabs for easy hanging and is made for shop use. The chart divides welding into basic operations with the equipment part listed under each that is suggested for Anscoating. The recommended rod and method of application is given. American Manganese Steel Division, American Brake Shoe Company.

4. Reynolds Aluminum Residential Windows. RP 800F. This 20-page catalog gives specifications, sizes and other details on a complete line of aluminum windows which includes standard, modular, casement, double-hung, and awning types. Sketches of installation of the various types are included showing use in the various types of building construction. Reynolds Metals Company.

5. 20th, Annual Report. This 24-page booklet is designed to give an abundance of information to the stockholders. While financial information about the company occupies several pages, others show the many products produced by the firm such as scrapers, cranes, bulldozer blades, hydraulic hoists, ditchers and other earth-moving and truck equipment. Several pages of maps graphically show the sales and service organization of the company. Gar Wood Industries.

6. Coralux Acoustical Plaster. This folder describes a perlite aggregate plaster for use in places where noise arresting is important. The text covers methods of application, coverage, sound absorption, base-coats, and other important points in using the material. The material needs only water to produce a lightweight, incombustible plaster. F. E. Schundler and Company.

7. E-M Synchronizer No. 25. The feature article in this issue of the company's quarterly publication is on standby or emergency power. The article deals with requirements of standby power, types of service available, controls for automatic operation, and other important points. Diagrams and installation photos are used to illustrate the article. Other articles in this issue cover turbine generator construction, generator selection chart, and generator switchgear. Electric Machinery Company.

8. Win Your Price Fight with a Challenge. A mailing folder that covers the highlights of the line of truck mixers made by the company. A reply card takes part of the space while a few testimonials take up the back portion. Cook Bros. Equipment Co.

9. Baughman's "Hi-Speed" Spreader Body. Form A-810. This single-sheet flyer covers a spreader body for gravel, salt, limestone and similar products that is being marketed as the Model "ASK-3-SC." Illustrations show the features of the truck body, and the installation of them. Special accessories to increase the usefulness of the body are included. Baughman Manufacturing Company.

10. Osgood-General. Bulletin 5108. This 4-page folder uses the two outside pages to show photos of machines in operation. Shovels, draglines, cranes, and clamshells are illustrated. The inside spread of the folder contains specifications on the complete line of machines. Crawler types, mobile types, and truck mounted types are tabulated. Both lines of machines, the Osgood and the General are covered. The Osgood Company.

11. A 50,000,000 Horsepower Insurance Policy. Form 88A38. An insurance policy provides the cover feature for this interesting booklet of 28 pages. The theme of the booklet is that the production of 50,000,000 hp. by one manufacturer can be regarded as insurance of dependability and service. It also covers the various design features of the 2-cycle type of diesel engine. Action photos of applications in construction, mining, marine, oil well, agricultural and industrial fields show the varied uses. Detroit Diesel Engine Division, General Motors Corporation.

12. Safety Rules for Electrical Maintenance and Construction Men. F-8292.27. This is section 27 of Westinghouse Hints on Electrical Maintenance. The 21 paragraphs of the booklet cover such subjects as methods, precautions, working on poles, safety devices, ladders, handling of circuits, operation of switches, handling fuses, working about motors, switchboards and power plant, resuscitation, and personal caution. Westinghouse Electric Corporation.

13. Romanas Bennington. This 28-page booklet is written in spanish and english and is the edition put out for Cuba. The various types of scales are covered such as suspended platform, weighbeam, tank, track and bin. Illustrations show applications and construction of the types while the text points out the capacities and other features of the scales. Fanning-Schuett Engineering Company.

14. Worthington Standard Industrial Pumps and Air Compressors. WP-1699-B52. This 24-page catalog has one-third of the space devoted to tables of hydraulic data, friction in fittings, friction in pipes, head, temperature factors, theoretical discharge and materials for corrosive service. Steam pumps, power pumps, rotary pumps, and centrifugal pumps are well covered. The last third of the book is devoted to air compressors from the small

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tank mounted units up to the large water-cooled machines. Worthington Pump and Machinery Corporation.

15. Application of Direct-Connected Synchronous Motors to Reciprocating Compressors. Publication No. 1200-TEC-1111. This 12-page bulletin is a reprint of a paper presented at the New York Section A. I. E. E., Power and Industrial Division, Motor Selection and Application Course. The bulletin deals with rotor flywheel effect, and presents formulas, sample calculations and reference curves. This publication is designed for the engineers reference library. Electric Machinery Manufacturing Company.

16. Butler Portable Batching Plants. Aggregate. Cement. Bulletin 205. This 20-page bulletin uses photos, drawings and diagrams to show the features of the different types of bins available for portable use. Among the types covered are 1, 2 and 3 compartment types, weighing batchers, bulk cement plants, cement elevators, cement batchers, auxiliary bins, and electro-interlocked batchers. Dimension drawings show the size of the parts and the amount of space under each bin. Butler Bin Company.

17. Tracto-Lift Fork Trucks for Heavy Duty Service. This bulletin is devoted almost entirely to application pictures showing some of the many uses of the heavy duty lift truck. The specifications are included for the three most popular models. Accessories are shown that adapt the truck to additional uses. Tracto-Lift Company.

18. Macwhyte Safe-Lock Wire Rope Assemblies. Catalog 5201. This catalog illustrates and gives detailed specifications for wire rope with fittings permanently attached. These assemblies are used for operating controls, as a part of machinery and equipment, and for slings and hoists. These are used on gasoline powered equipment, mining machines, and many other places. Macwhyte Company.

19. Little Giant Crane. This 20-page bulletin covers the specifications and uses of the ⅜-cu. yd. and ½-cu. yd. cranes. These cranes can be adapted for dragline, shovel, clamshell and trenchoe use. Photos show the major assemblies and the text points out the features. Applications of the machines are illustrated and the major features are enumerated on the center spread. Drawings graphically show the radius of different length booms and the effective lengths. Little Giant Crane and Shovel Inc.

20. Nordberg 4T3 Diesel Engines. Bulletin 194. The design and operating features of the one, two and three cylinder diesel engines made by the company are presented in this 12-page bulletin. These engines are of the 4-cycle, vertical mechanical injection type, with ratings from 10 to 45 hp. The engines are offered as complete units with pump, generator, or power take-off for the direct connection of belt or other drives. Kilowatt ratings and pumping capacities of the various models are given. Photos are used to show the various models and also to illustrate the many applications to which they put. All main engine parts and complete engine specifications are given. Nordberg Manufacturing Company.

21. Dwight-Lloyd Sintering Machines. This folder illustrates the sintering machine and describes the sintering process. The various steps and the machinery needed are pointed out. A typical flow sheet is shown of a sintering plant. Dimensions and capacities of the various sizes are given in a tabular arrangement. Sintering Machinery Corporation.

22. Tisco Drag Line Bucket Chains. Bulletin No. 552. This bulletin illustrates, describes and gives specifications for the line of manganese steel drag line bucket chains. The method of manufacture so that each chain is cast in interconnected molds so that only one heat of steel is used in each chain is pointed out. Taylor-Wharton Iron and Steel Co.

23. Winning the West With Power. This is a miniature album of colored photographs of Cummins-powered diesel engines at work in construction, logging, and transportation in the western states. Various types of equipment were photographed in actual operations to present this story in the colorful settings of the western area. Watson and Meehan.

24. Blending. Bulletin No. 152. This 16-page bulletin supplies a thorough explanation of blending. The subjects considered are what is blending; advantages of blending; and principles of mixing, blending, and proportioning. Several methods of blending are presented and the machines for reclaiming from the stockpiles are described. The whole bulletin is well illustrated with drawings to show the methods used and with photographs of actual applications of the methods. This bulletin is designed for organizations where blending of materials may effect improvements in practice, efficiency, and productivity. Robins Engineers Division, Hewitt-Robins Inc.

25. The Pioneer-Ore Manganese Steel Feeders. Form No. 630. The complete line of manganese steel feeders for mines, cement mills, and quarries manufactured under this trade name are presented in an attractive 20-page booklet. The booklet explains in detail the physical features of the feeders and gives operational data including capacities, horse-power and dimensions. Designed for handling shock loads of material of an abrasive nature the wearing parts are made of a cast, specially developed, manganese steel alloy. Various drives are explained as well as lubrication systems. The features of the line such as renewal sprocket teeth, drive links integral with pans, interlocking lugs, and so on, are described. The illustrations show the several models and also typical installations. Pioneer Engineering Company.

26. Herman Nelson Economy Model Portable Heater. Form 3006. This one page catalog sheet illustrates a portable heater designed for heating buildings, preheating engines, ventilating and heating cars, and for other uses where portable heat is needed. The unit is electrically powered for forced circulation of the air. Specifications, fuel consumption, and various accessories such as canvas ducts are given. Herman Nelson Division, American Air Filter Company.

27. Pulverator. Multi-Impact Hammermill. Bulletin 07B6265A. This bulletin explains the multi-impact principle of the "Pulverator" hammer mill in breaking and pulverizing limestone, shells and other non-abrasive materials. Photos show the major parts of the machine while drawings illustrate the breaking action that takes place. Dimension drawings show the space requirements of the various models. Photos show the relative size of products of the machine. Allis-Chalmers Manufacturing Company.

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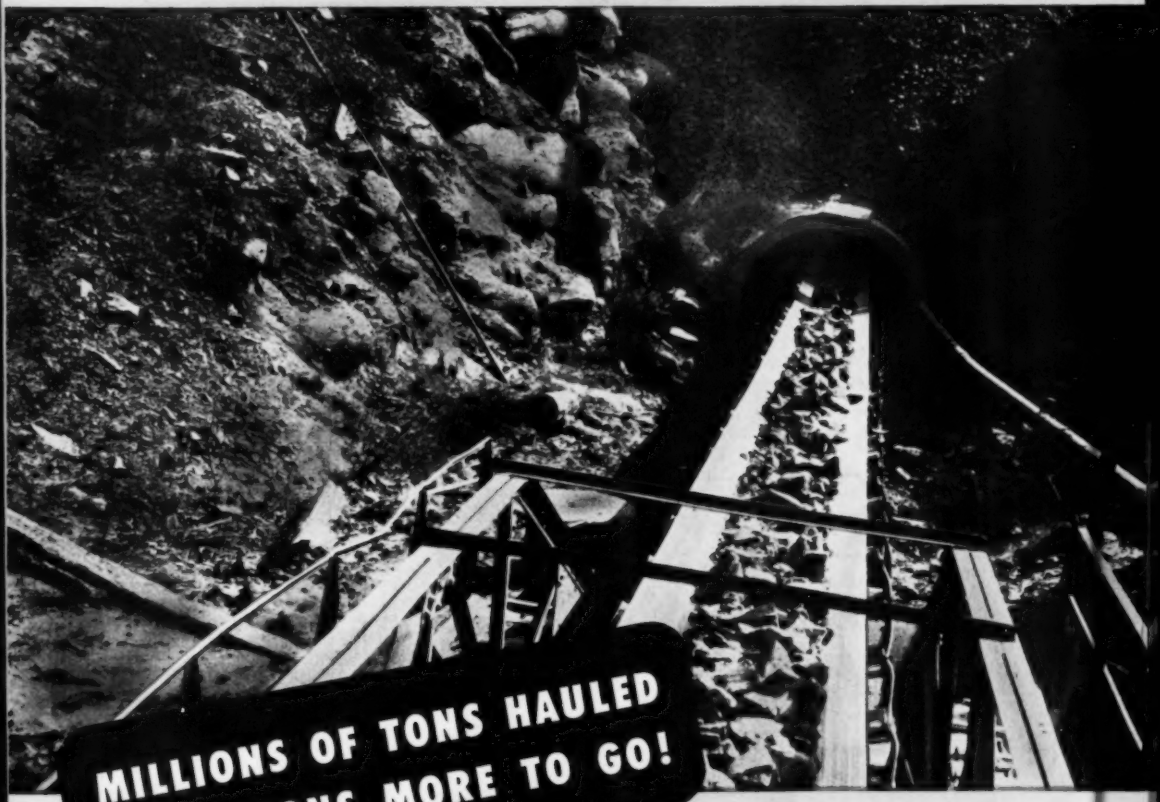
QUAKER *Production-eered** BELTING



QUAKER CONVEYOR BELTING

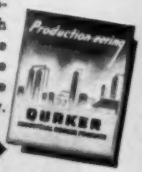
MOVES 3,000,000 TONS OF ABRASIVE GRANITE . . . STILL GOING STRONG

Millions of tons of sharp, abrasive crushed granite—moved without noticeable wear or tear to the belt. And still going strong. High uninterrupted production . . . low maintenance . . . low cost per ton. That's the long-life story of this tough rubber conveyor belt "Production-eered" by Quaker for Greystone Granite Quarries, Henderson, N. C.

"Production-eered" to stand up and take it, this 42-inch Quaker Belt has traveled tens of thousands of miles over the years—on an endless torture test. Shock, abrasion, rain, snow, heat and cold have done their worst . . . yet today it's ready for more.

Just one more example of Quaker "Production-eering" at work. Let an experienced Quaker "Production-eer" help you boost production, cut costs—with Quaker "Production-eered" belting, hose, packing, and molded rubber products.

***Production-eering**—Every Quaker Industrial Rubber Product is "Production-eered"—engineered to provide maximum life, efficiency and production on each type of installation. Quaker "Production-eers" are ready to recommend the right rubber product for the right job. For timely production tips, get the new free booklet on Production-eering for Industry. Write today.



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QUAKER RUBBER CORPORATION

DIVISION OF H. K. PORTER COMPANY, INC.

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IS DRYING YOUR PROBLEM?

RUGGLES-COLES DRYERS

Ruggles-Coles Rotary Dryers, built by Hardinge are available in the following styles:

CLASS XA

—Double shell, semi-direct heat. High efficiency. For materials that can be dried in direct contact with combustion gases and heated above 212°.

CLASS XB

—For materials that must be dried by indirect heat but can be heated above 212°. A double shell dryer with low dust loss.

CLASS XC

—Steam tube dryer for materials that must be dried by indirect heat and at low temperatures, such as chemicals, grains, food products.

CLASS XF

—For direct heat drying at temperatures above 212°. A single shell counter-flow dryer that does not discharge the material through the furnace.

CLASS XH

—For direct heat drying at temperatures above 212°. A single shell parallel flow dryer designed to handle sticky materials.

CLASS XW

—For material that can be dried by hot air at temperatures below 212°. Dries ammonium nitrate; potassium chloride, etc.

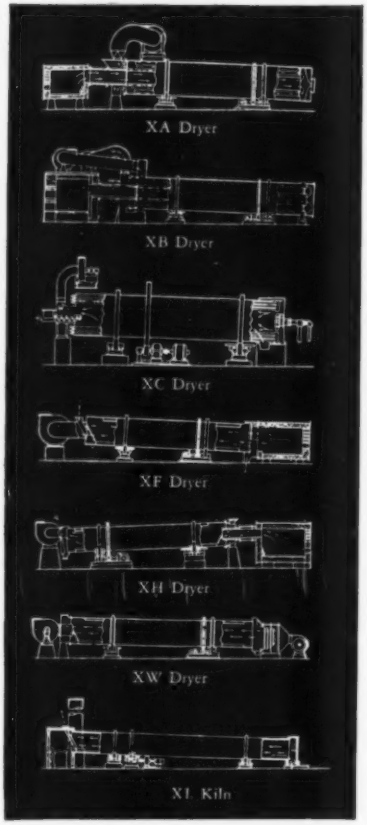
KILNS

—Rotary type for drying, calcining, roasting or oxidizing at temperatures above the range of ordinary dryers. Refractory lined.

COOLERS

—Air, water spray or submerged rotary type. Each designed for the efficient cooling of materials from kilns or roasters.

Bulletin 16-D-S describes entire Ruggles-Coles line.



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COMPANY, INCORPORATED

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122 E. 42nd St. 24 California St. 205 W. Wacker Dr. 2016 First Ave. 200 Bay St.

• Cloth Dust Collector

A cloth-bag collector for dusts such as lime, pigments, and similar materials has been announced by the Pangborn Corporation, Hagerstown, Md. These collectors feature simplified design of filter bags and reclaiming mechanism, and low equipment and installation cost.

The collector consists of cloth bags which are fastened open end down to

suspension members. The open end has a rubber hem which is clamped over an opening in the floor of the collector. Dust-laden air enters at the bottom of the collector and drops the heavier portion of the dust load into the collecting hoppers as a result of the reduced velocity. The air moves upward into the bags and passes through them on the way to the exhaust outlet at the top of the collector. Cleaning of the bags is accomplished by shutting down the flow of air and turning on a shaker motor which shakes the suspension members holding the bags and dislodges the dust, which drops down into the hoppers. The hoppers are located so that the reclaimed dust may be emptied into carts, trucks, or other containers by opening a valve in the bottom.

Sizes range from 5 to 40 ft. long, with 1,360 to 10,880 sq. ft. of filter cloth, and from 3 to 6 hoppers. No special tools are required for inspection and servicing of the collector.

• Improved Greases

Two new greases with improved qualities of wear and lubrication have been introduced by the Texaco Company, New York, N.Y.

Texaco "Multifak 2" is recommended for situations where one grease is used for a variety of operations. This grease has excellent shear stability, resistance against water washing, and good pumpability at low temperatures. It is useful over a wide range of temperatures and can be used on an extensive variety of lubrication jobs.

Texaco "High Temp Grease" is recommended for ball, roller, and plain bearings operating at high temperatures. This grease has excellent oxidation resistance and is also resistant to washing out by water, states the company. Temperatures up to 300 deg. F. continuous service or 350 deg. F. intermittent service are said to call for the use of this grease.

INCREASE YOUR PRODUCTION WITH

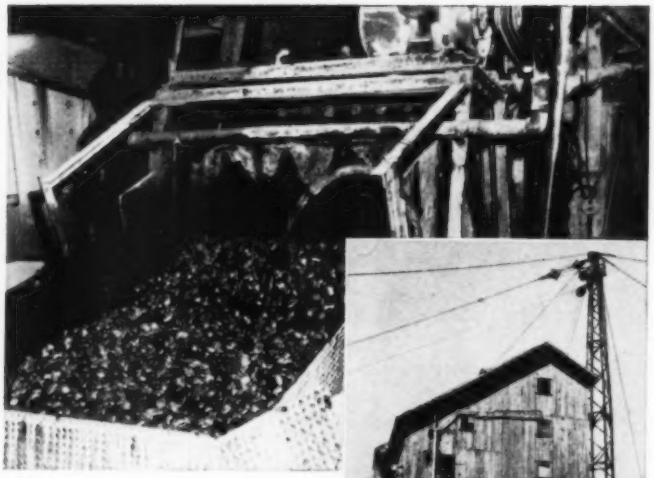
Teeth that really Dig!

POSITIVE LOCKING
FLEX-PIN CONNECTION

H&L TOOTH COMPANY

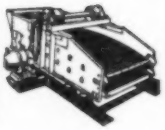
1940 SO. [illegible] AVE. MONTEBELLO, CALIFORNIA

(Pioneer Manufacturers of Two-Part Teeth)



Screen cloth life is "very satisfactory" and so is the life of the Deister machines, reports owner of the Steiner Sand and Gravel plant, West Milton, Ohio. One Deister replaced an unsatisfactory unit of another make in 1944, and their second Deister replaced the original Deister which took daily punishment at the Steiner plant for 21 years.

21 YEARS CONTINUOUS OPERATION



That's right . . . it took 21 years daily punishment to wear out the original Deister Screen in the plant of the Steiner Sand and Gravel plant near West Milton, Ohio. That's why the Steiners, Walter J., and son, Richard, chose another Deister.

The Steiner plant utilizes two sizing screens—both Deisters—in this 650 tons per day capacity plant. Screens have to be good, to produce uniform results, because aggregate processed comes from three separate sources and varies widely. The 3 x 6 Deister 3-deck screen was bought in 1950 to replace a similar Deister which had been in continuous use since 1929. Their 4 x 10 4-deck Deister Screen was purchased in 1944 to replace one of another make that had been giving excessive bearing trouble.

Deister screens have long life and they give screen cloth long life. They belong in your plant. Get the facts from your Deister dealer or write direct to the factory.

DEISTER SCREENS

DEISTER MACHINE COMPANY

FORT WAYNE 4, INDIANA

● Heavy-Duty Trucks

A new series of trucks, the "3400" Style Liner models, has been announced by the Federal Motor Truck Company, Detroit 9, Mich.

The new series includes three models that range in gross vehicle weights from 23,000 to 25,000 lb. There are eight wheelbase lengths from 136 to 250 in.

Cab to axle dimensions are from 60½ to 174½ in.

These trucks are powered by a six-cylinder "Power Chief" valve-in-head engine which develops 145 hp. at 3,000 r.p.m. and has 371 cu. in. displacement. High-lift camshaft, full length water jacketing, and directional cooling are additional features of the engine.

A duplex carburetor coupled with improved manifolding and individual porting provides uniform distribution of fuel to the cylinders and is said to give high power and smooth operation combined with economy.

The cab and frame have been designed for driver convenience and safety.

● Car Door Protector

A fibre board car door protector known as the "Protosok" car door protector is being manufactured by Hubbs and Howe Company, 1702 Elmwood Avenue, Buffalo 7, N.Y.

The protector is usually 12 in. wide and 60 in. long and is scored to fit around the sharp corner of the car door post. It is stapled into place. Four of these protectors are used in each car and serve to prevent chafing and tearing of the bags when they come in contact with the corner of the posts during transit. It is said that these protectors have caused a marked reduction of damage claims due to tearing of bags in shipping.

● Power Package

A conversion power package for motor crane carriers has been developed by the White Motor Company, Cleveland 1, O.

The power unit includes the Model 280A "Mustang" engine, which is a 6-cylinder, 184-hp. rating at 300 r.p.m., gasoline-powered industrial type, with accessories to permit ready conversion.

● 1-yard Tractor Shovel

A one-cu. yd. capacity tractor shovel featuring four-wheel drive has been announced by the Frank G. Hough Company, 750 Seventh Street, Libertyville, Ill. This model is powered by a 60-hp. diesel or a 54-hp. gasoline engine as desired.

The machine has large tires, the same size on all wheels, and power is applied to all four. The large tires and four-wheel drive give tremendous traction and flotation, according to the company. Steering is by the rear wheels, equipped with power booster. Hydraulic power controls the bucket operation. Boom rams and dump rams are double acting so that positive pressure can be applied to the digging operation.

Attachments for the new model include bulldozer blade, crane hook, fork lift, and snow plow.

● Laboratory Dryer

A laboratory dryer that features control of temperature and circulation has been announced by the Denver Equipment Company, 1400 17th Street, Denver, Colo.

The dryer operates on single-phase, 50-60 cycle, 110 or 220 volts a.c. It has asbestos air-cell insulation on the oven, which uses two standard replaceable heating elements. Power consumption is generally less than five cents per hour of operation. Temperature is maintained by a thermostatic control that permits adjustment from 0 to 325 deg. F.

Humidity and drying conditions are maintained by a forced-air circulating damper on the back of the dryer, which has three stages of adjustment. The fan is driven by a motor outside the dryer and away from high heat. Air is forced in over the heating elements and discharged through specially located ports. An adapter is provided so that the dryer can be vented to a 3-in. stove pipe. The dryer is portable and may be easily moved to various locations, or may be stacked or banked for multiple operation.

"new standard" Jaeger Compressors

15% - 25% more air
600 cfm instead of 500, 365 cfm instead of 315, 250 cfm instead of 210 (and smaller sizes comparable).
30% - 40% more work
Example: With 365 cfm of 100 lb. air (instead of 315 cfm) 3 heavy rock drills will average 35% more footage because they work at full pressure, not mere 70 lbs.

Why starve your modern air tools with "old standard" compressors that have not increased their air output in 19 years? Jaeger Air-Plus standards provide the increased air you need to power today's tools at their full efficiency—*at the lowest cost per foot of air of any compressors on the market.*

See your Jaeger distributor or send for complete Catalog

THE JAEGER MACHINE COMPANY

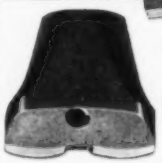
602 Dublin Ave., Columbus 16, Ohio

PUMPS • MIXERS • HOISTS • TRUCK MIXERS • PAVING MACHINERY

BRUNNER & LAY
tungsten carbide
ROK-BITS®

greater footage

• Use Brunner & Lay Rok-Bits to give you the most for your money from man and machine. Brunner & Lay Rok-Bits give full support of the carbide to absorb impact on every stroke. Channel design affords maximum clearance. To save money and time, ask your dealer for Brunner & Lay Rok-Bits . . . or write to us.



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longer life

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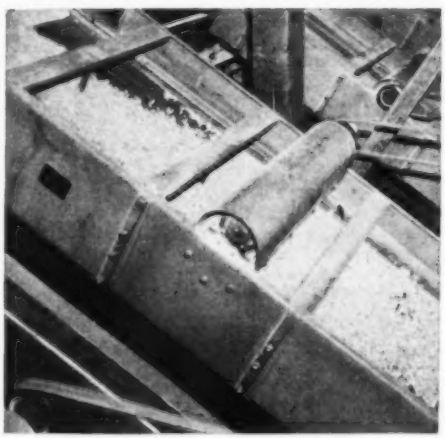
WISE-BUYING FOR 1952!

Your dollar, anemic as it is today, gets a square "shake" on a UNIVERSAL!

You save on:
Initial cost
Maintenance
Operation

and profit by:
Cleaner sizing
Higher capacity
Less downtime



Get the facts today! Write for Catalog No. 109 on Screens and Screening.

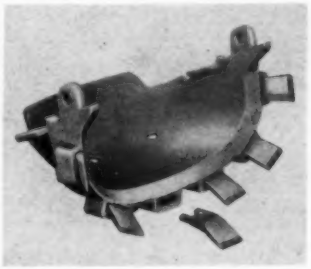
Battery of Type "MR" 42"x96" 2-deck Screens in a modern Limestone plant.

UNIVERSAL VIBRATING SCREEN CO.
RACINE — — WISCONSIN

● Removable Bucket Teeth

Removable bucket teeth have been adopted as standard equipment on the line of "Trenchliners" built by the Parsons Company, Newton, Ia.

The teeth are designed to be self-locking, and to retain a sharp point

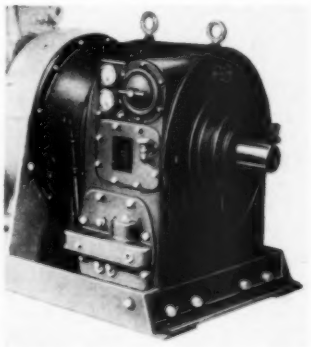


until worn out. Reversing is not necessary, and replacement is by tapping out the old teeth and tapping in the new. Tooth holders are cast integrally with the new buckets but adapters can be welded on to any of the older style buckets. The new teeth are being marketed under the name of "Tap-in" bucket teeth.

● Torque Converter

A single-stage three-element torque converter has been added to the line of the Torcon Corporation, 1176 W. Fifth avenue, Ashtabula, O.

The new "Model 17-K" combines a hydraulic torque converter and a hydraulic coupling in one unit. It is suggested for use on cranes, shovels, locomotives, road and construction machinery, and material-handling equipment.



The unit can be easily installed under most conditions or it can be modified for special applications. Roller bearings add to the life of the unit; and it is so designed that a sprocket or gear drive can be attached to the output shaft without the use of an outboard bearing.

Leroy A. Sweinberg, for the last nine months an assistant engineer in the Allis-Chalmers processing machinery department, has been assigned to the company's Wilkes-Barre district office as a sales representative.

● 18-ton Dump Truck

A new model dump truck of 18-ton capacity has been announced by the Sterling Division, The White Motor Company, Cleveland 1, O.

The new model has a planetary-drive type rear axle equipped with a Sterling-White Super-Traction differential. This

differential transfers most of the tractive force to the wheel having the most grip and almost entirely eliminates spinning of a wheel under wet and slippery conditions. A short wheelbase and hydraulic power-actuated steering makes this model exceptionally maneuverable. Ten forward speeds can be selected from the heavy-duty transmission.

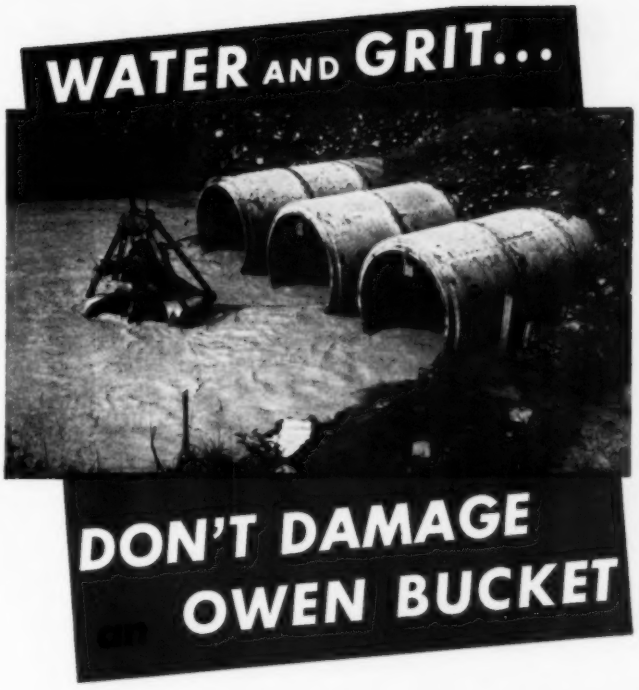
The frame is lined with 2-in. oak insert which is bolted into place to facilitate maintenance. The new model is designated as the Sterling-White Model "SB300ID."

Edward R. Anderson has been appointed president of the American Forge Division, and William E. Crocombe has been made assistant to the chairman of the American Brake Shoe Company. Mr. Anderson was a vice-president of the Brake Shoe and Castings and Kellogg Divisions. Mr. Crocombe, president of the American Forge Division for 28 years, has reached the retirement age, but he will continue to be available for special assignments by the chairman of the board. He now has the assignment of the building and starting of operations of a new forging plant which the company is erecting on the West Coast.

Denver Equipment Company, Denver, Colo., is celebrating its 25th anniversary. The company now has branches in Chicago, New York, El Paso, Toronto, Vancouver, London, Mexico City, and Johannesburg, S. Africa. During the 25 years the company has developed a number of specialized machines, particularly in the field of flotation.

Appointment of Fred H. Kroeger as sales manager in charge of power brakes and devices for the Marvel-Schebler Products Division, Borg-Warner Corporation, was announced recently.

Chester H. Lehman, identified with Blaw-Knox Company for 42 years, announced his retirement as executive vice-president of the company. It was stated that Mr. Lehman will continue as a director and vice-chairman of the board of Blaw-Knox Co., and that he will also serve in an advisory and consulting capacity to the president.



With a less expertly designed bucket water would likely carry abrasive sand and grit into the bearings causing excessively rapid wear and deterioration.

Not so with an Owen.

Years ago Owen engineers learned the hazards of difficult underwater service.

And through experimentation and experience they designed bearings that retard these destructive forces.

For the protection of your buckets and in your own financial interest "buy an Owen" equipped with *abrasion resisting, pressure-lubricated bearings*.

Get the interesting Owen catalog.

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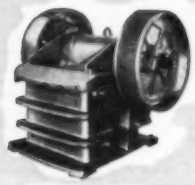
Crushing, Washing, Screening Machinery

For 32 years Lippmann engineers have specialized in the design and construction of machinery and plants to produce crushed stone, sand and gravel. During that time they have earned the confidence of the industry to the extent that Lippmann equipment is the choice of many leading aggregate producers and contractors.

You, too, can look to Lippmann with confidence for the finest of equipment to meet your needs — for individual crushers, feeders, screens, washers or conveyors — or for complete plants. Lippmann Engineering Works, 4607 West Mitchell Street, Milwaukee 14, Wisconsin, U. S. A.



JAW CRUSHERS
Sizes up to 36 x 48 inches (the largest overhead eccentric jaw crusher made). Features 25% more crushing area, non-choking construction, maximum output, minimum power use and maintenance.

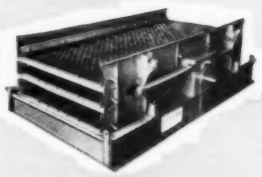
GYRATORY CRUSHERS
Revolutionary anti-friction gyratory operation with parallel shaft rotation results in lighter weight, less power consumption, reduced maintenance and controlled product size. Sizes 25 to 72 inches.

ROLL CRUSHERS
Offer real economy in secondary crushing. Exact product size control; tapered roller bearings; a variety of shell face patterns available; easily replaceable wear plates reduce maintenance. Sizes up to 72" x 24" rolls.

CONVEYORS
Complete line of both portable and stationary conveyors. Lippmann Life-Sealed ball bearing conveyor idlers are outstanding for lower first cost and maintenance. Ball bearings are lubricated for life.

APRON FEEDERS
LIPPMANN makes apron feeders and plate feeders to meet all feeding requirements. Every design has been thoroughly proven by rigorous field service and built for long wear and low power requirements.

SCREENS
Vibrating screen pictured is positive eccentric type with equally distributed vibration for maximum capacity. Vibration contained in screen body entirely. All sizes, single and multi-deck.



PORTABLE PLANTS
Portable washing plants, as pictured, combine scrubber, vibrating screen, sand drag, conveyors. Capacities up to 120 c.y. per hour. Lippmann also makes trailer and self-propelled crushing plants including screening and loading elements.

PULVERIZERS
An unusual design of hammer-type crusher with unmatched records of capacity, product size and quality control, low first-cost and ease of maintenance. Manganese hammers, forged hammer arms and other outstanding design features. Sizes up to 40" x 36".

LEW **LIPPMANN**

CRUSHERS FEEDERS SCREENS CONVEYORS ELEVATORS HOPPERS BINS

obituaries

RAYMOND H. CLARK, president of the Oak Ridge Sand Company, Mulberry, Fla., died on November 24, 1951, at a hospital in Lakeland, Fla., after an extended illness. He was 49 years old. Mr. Clark was also president of the R. H. Clark Equipment Company of Mulberry, and an agent for the Standard Oil Company.

FRANK J. REGAN, an official of the Garden City Gravel Corporation, Waltham, Mass., died on January 18.

WILLIAM ARCHER, a member of the U. S. Gypsum Company's sales department, died on February 6 at a hospital in the Bronx. He was 35 years of age. A graduate of Lehigh University, Mr. Archer was a major in the Office of Strategic Services during World War II, serving in the China-Burma, India theatre. Until last spring he was a captain in the 7th Regiment.

HOWARD R. STALEY, who formerly worked on research for the National Lime Association, died late last year of a heart attack in Washington, D. C. At the time of his death he was employed by the Atomic Energy Commission in Washington. While he was affiliated with the Massachusetts Institute of Technology as a professor of building construction, he contributed a substantial amount of valuable technical data on mortars and lime.

WHARTON CLAY, 70, secretary-treasurer of the Perlite Institute, died on January 2 of a heart ailment in his home after an illness of six weeks. A pioneer in conducting trade association activities, he was also secretary-treasurer of the National Mineral Wool Association and a commissioner of the Metal Lathe Manufacturers Association.

Mr. Clay was a member of the Fuel Conservation Board during World War II, and was a member of several building industry associations, including the Architectural League of New York and the American Standards Association.

HOWARD PICKENS, 56, a foreman at the Lone Star Cement Corporation for the last ten years, died at a Dallas, Tex., hospital on January 1 following an extended illness.

SPENCER E. COOPER, who worked for several years as foreman in the packing house at the Lehigh Portland Cement Company's Mitchell, Ind., plant, died on December 15.

HAROLD P. ZOECKLER, safety and personnel director for the Dragon Cement Company, Inc., died recently after an illness of three days. At midnight of the day on which Mr. Zoeckler was stricken with a heart seizure, a 1,000-day accident-free period was completed at the Northampton plant, a goal for which he had been working for months.

Mr. Zoeckler entered the service of the Lawrence Portland Cement Company (merged with Dragon this year) on March 1, 1948, after a most successful career with the Grumman Aircraft Company. He was 55 years old.

CLARENCE J. SWAIN, 71, a superintendent for the Buffalo Slag Company, Inc., Buffalo, N. Y., since 1915, died on December 28, 1951.

Mr. Swain, a native of Huntington, Ind., came to Buffalo in 1913 and joined Buffalo Slag. Two years later he became superintendent of Plant No. 1 and since that time, he has served as superintendent of each of the company's Buffalo plants.

PIONEERS and LEADERS IN DUST CONTROL

Continuous Sly Dust Filter on a Feldspar Plant in Maine
Sly Dust Filter in a Rock Crushing Plant in Connecticut
SLY
Long Experience May Save You Thousands of Dollars

Many years of experience and numerous operating installations IN YOUR PARTICULAR INDUSTRY make Sly the outstanding organization to engineer your dust problem.

The know-how of dust collection cannot be found in print. It has been acquired by Sly through experience with thousands of installations for generations.

A note from you will bring you our text book bulletin or, if you wish, a Sly engineer to help lay out and specify suitable equipment.

Sly units are not expensive; they save thousands of dollars yearly in plant maintenance and improved production.

THE W. W. SLY MANUFACTURING CO.
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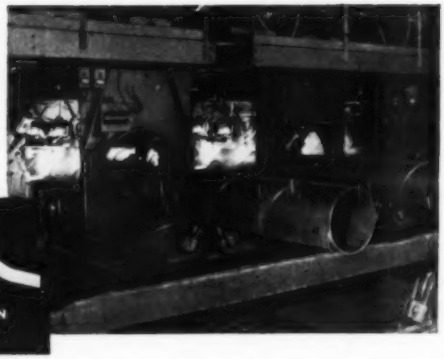
CINCINNATI ST. LOUIS INDIANAPOLIS BIRMINGHAM LOS ANGELES TORONTO

How NAYLOR Light-weight Pipe is built to take it

Here is the picture story of how Naylor creates a light-weight pipe for heavy-duty service.

In this operation, the Naylor pipe machine forms sheet into a spiral, lock-seamed pipe. This process creates a structure that is pipe before it is welded. As shown in the sketch of a lateral section before welding, the lockseam carries the structural load.

Illustrated here is the Naylor automatic welding process which welds the lock-seamed spiral to the wall of the pipe. This step provides a positive seal as shown in the lateral-section sketch after welding.



Because the lockseam carries the load and the weld is relieved of any strain, Naylor pipe provides the practical answer for lines that must stand up in rugged service in the mining field.

Write for Bulletin No. 507

Naylor Pipe Company
1257 E. 92nd St., Chicago 19, Ill.
New York Office:
350 Madison Ave., New York 17, N.Y.

EWALD E. REIMAN, 81, who was formerly president of the Reiman Lime & Cement Company of Terre Haute, Ind., died on November 19 at his home in that city. He had also served as president of the Fort Harrison Savings Association for 20 years.

A veteran empoyee of the Cleveland Quarries, JACOB EBERSOLD, 73, died recently at South Amherst, O. He had been a machinist for Cleveland Quarries for 50 years.

ROBERT KINGERY, 61, who was associated with the Portland Cement Association as an engineer for several years prior to 1925, died on November 13 after an illness of one month. Mr. Kingery was chairman of the newly-created Chicago Port Authority and had been secretary and general manager of the Chicago regional planning commission since 1925.

HARRY BERNO, president of the Medusa Portland Cement Company of Cleveland, O., died on November 23, 1951, of a heart attack in the Waldorf-Astoria Hotel in New York.

WALTER N. TOWNSEND, 68, a salesman for the Limestone Products and Supply Company, Bridgeville, Pa., died on December 12.

ARTHUR JOSEPH LEY, 57, Chicago district sales manager of the U. S. Gypsum Company, Chicago, died on December 27 after a two months' illness. Mr. Ley, who had been associated with U. S. Gypsum for 42 years, was one of the founders of the Builders Club of Chicago.

E. KEMPER CARTER, 67, chairman of the board of the Carter-Waters Corporation, Kansas City, Mo., died on December 23 at a Hospital in Kansas City. A graduate civil engineer, Mr. Carter, together with Albert R. Waters, founded the Carter-Waters firm, which observed its thirtieth anniversary on January 1.

Mr. Carter served as a captain in the army engineer corps during World War I, and in 1921, after he had been discharged from the service, founded the E. K. Carter Company, forerunner of Carter-Waters. He was president of the corporation from 1922 until 1940, and had been connected with numerous industrial and civic organizations. His business and professional affiliations included the American Society of Civil Engineers, American Society of Testing Materials, Missouri Society of Professional Engineers, the Association of Asphalt Paving Technologists, Engineers Club of Kansas City, American Road Builders Association, and the Missouri Highway Engineers Association.

OTTO J. ELLIGEN, 62, president of the Conco Building Products, Inc., Mendota, Ill., and a member of the National Sand and Gravel Association, died recently at the Mendota Community Hospital, an institution which he had been instrumental in founding.

trade notes

C. H. Crain has rejoined the International Paper Company after a year of active duty with the United States Marine Corps.

Mr. Crain has been assigned as a salesman with the Bagpak Division's Baltimore office. His territory will cover Maryland and Virginia and parts of Delaware, West Virginia, and North Carolina.

The Reeves Pulley Company, Columbus, Ind., has announced the appointment of James A. Miller as manager of its newly-opened sales and engineering office in Los Angeles. Assisting Mr. Miller in the operation of the new office is Harlan M. Gillis, an engineering graduate of Northeastern University, Boston. Until his transfer to Los Angeles, Mr. Gillis was a member of the engineering department at Columbus. Prior to that time he was for seven years associated with the Reeves New England Office.

A. C. Cartwright has been appointed general sales manager of Seaman Motors, Milwaukee, Wis.

A. C. Cartwright

Mr. Cartwright has been engaged in the construction equipment field for more than 23 years, and has a wide knowledge of the manufacturing, sales, and distribution aspects of the industry. Before joining Seaman Motors, Mr. Cartwright was Central Eastern Division sales manager of the Trackson Company.

Charles E. Nelson Jr. has been elected a director of the Waukesha Motor Company, Waukesha, Wis. He is also vice-president for production.

C. E. Nelson

Mr. Nelson has been with the company since 1929 and has served as factory production manager, director of purchases and production planning, assistant to the president, and vice-president in charge of production. He also served as secretary and treasurer of the Fageol Truck and Motor Coach Company when it was a subsidiary of Waukesha Motor Company.

Charles F. Pekor Jr. has been named general manager, and Clyde A. Butler has been appointed general superintendent of the Pekor Iron Works, Columbus, Ga.

Mr. Pekor succeeds his brother, R. B. Pekor, who resigned to organize a new business. Mr. Butler is the inventor of the "Tell-Tale" centrifugal sand pump. Both men have been associated with the company previously.

The following distributors have recently been appointed by Sterling Electric Motors, Inc.: Industrial Electrical Co., 1244 McHenry Ave., Box 1025, Modesto, Calif.; Butte Machinery Co., 510 E. Aluminum, Butte, Mont.; Pomona Electrical Machinery Co., 260 N.E. End Ave.; Pomona, Calif.; Industrial Motor Electric, 449 West Street, Woodland, Calif.; Meyer Brothers Company, Phillipsburg, Pa.; and Transmission Equipment Co., 527 Lexington Ave., New York 17, N. Y.

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CONTINUOUS PROCESS HYDRATOR

Experienced American lime producers are pointing to the superior performance of the Knibbs Hydrator.

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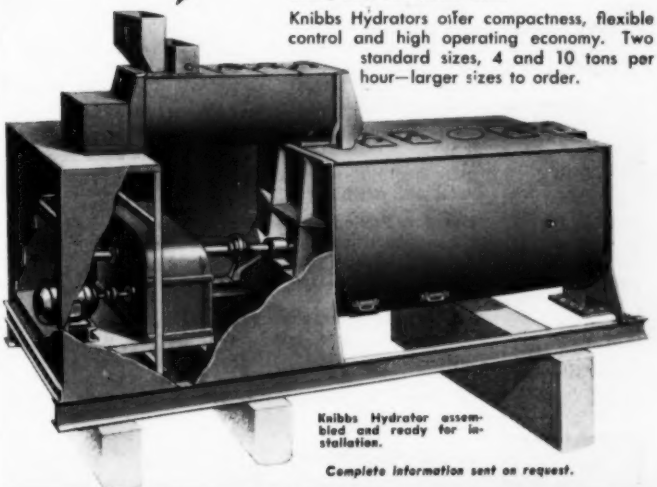
Knibbs Hydrators offer compactness, flexible control and high operating economy. Two standard sizes, 4 and 10 tons per hour—larger sizes to order.



Knibbs Hydrator assembled and ready for installation.

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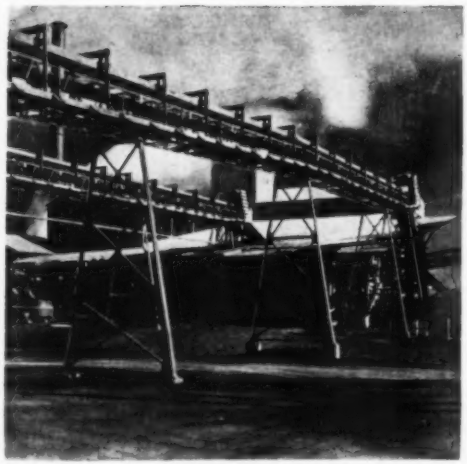

A "Packaged Unit" to Meet Your Belt Conveyor Needs

The HEWITT-ROBINS SECTIONAL BELT CONVEYOR

Easy to Assemble ***Pre-Engineered***

Strongly Constructed

Here is the complete belt conveyor that will meet the requirements of both small and large operators handling bulk materials.

Easy to Assemble: Your own men can assemble, disassemble, move, extend or shorten it quickly and easily.

Take Your Choice: Select the right belt conveyor to fit your own particular needs—you have a choice of 3 types of drives—wide selection of intermediate truss lengths—your choice of idlers—(4", 5" or 6" diam.)—4 belt widths (18", 24", 30" or 36") in lengths up to belting limitations.

Factory-Assembly Units: All truss side members are factory-welded as complete units and are jig-drilled for easy erection—head and tail units completely assembled with machinery in place.

Standard Equipment: Self-cleaning, protective decking for return strand supplied for the entire conveyor line.

Optional Equipment: Hood covers—easily attached loading hopper.

Only Hewitt-Robins is able to take single unified responsibility for a belt conveyor installation—both machinery and belt.

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HEWITT-ROBINS INCORPORATED

ROBINS CONVEYORS DIVISION

270 Passaic Avenue, Passaic, N. J.

The Union Tractor and Equipment Company, Calgary, Alta., Canada, has named S. J. Lydiatt sales manager for the firm. He has been with the company

J. M. Nicholas

S. J. Lydiatt

for 17 years and was assistant to the managing director.

At the same time J. M. Nicholas was named sales manager for equipment allied to the Caterpillar line—Trackson, Athey, and Hyster products.

J. V. Munro

The retirement of Vice-president John V. Munro of Caterpillar Tractor Company, December 31, 1951, has been announced.

Mr. Munro has been with the company since its formation in 1925. Born in Canada, he came to the United States at the age of 14 and gained his early business experience with the American Can Company and Kinsey Manufacturing Company, both of Toledo, O.

He joined the C. L. Best Company of San Leandro, Calif., a predecessor of Caterpillar, in 1921 as purchasing agent. In 1925 he moved to Peoria as purchasing agent, and the next year he became vice-president of Caterpillar. He is a member of the American Iron & Steel Institute, the American Society for Metals, and the Army Ordnance Association.

Fred P. Biggs has been elected a vice-president of American Brake Shoe Company. He is also president of the company's Brake Shoe and Castings Division.

W. J. Ehrsam Jr. has been appointed president and general manager of the J. B. Ehrsam and Sons Manufacturing Company, Enterprise, Kan.

The Materials Handling Institute, a trade association of manufacturers of conveyors, hoists, lift trucks, containers, and similar items, recently elected L. West Shea, Union Metal Manufacturing Company, Canton, O., president. First and second vice-presidents are, respectively, John C. Mevius, American Engineering Company, Philadelphia, Pa., and H. M. Palmer, Lewis-Shepard Products, Watertown, Mass.

Two Caterpillar Tractor Company executives have been named to direct the expansion of facilities and operations at Joliet, Ill., and York, Pa. They are T. R. Farley and William L. Naumann.

Mr. Farley, a vice-president of the firm, will go to York and establish a

W. L. Naumann

T. R. Farley

temporary office as construction of the 360,000 sq. ft. plant gets under way. Production will center around replacement parts for "Caterpillar" products.

Mr. Naumann, assistant general factory manager at Peoria, succeeds Mr. Farley as general manager of the earthmoving equipment plant at Joliet, Ill. Expansion plans at Joliet call for a 75 percent increase from the present 662,400 sq. ft. of manufacturing area.

Towmotor Corporation, Cleveland, O., has added four new posters to its "Plant Safety Kit" for companies using fork trucks and tractors in their operations. The kit, available from the company, contains safety instructions for using lift trucks, traffic markers, and bulletin board "safety tip" cartoons.

SKF Industries, Philadelphia 32, Pa., recently presented one-fourth of a ton of silver dollars to its employees with 20-years or more of service. Each 30-year employee received 100 silver dollars and a silver bowl in recognition of his service. The presentations were made to the 87 "SKF Old-Timers" at a dinner in Philadelphia. Some of the employees were brought to the dinner from Oregon and California.

R. G. LeTourneau, Inc., Peoria, Ill., has announced the appointment of John H. Way as a company district sales representative. His territory will cover Colorado, Wyoming, Montana, and Idaho.

William M. Wallace has been appointed an assistant to the vice-president of Allis-Chalmers General Machinery Division.

Mr. Wallace has been special assistant to G. V. Woody, manager of the company's processing machinery department since 1947. He entered the employ of Allis-Chalmers in 1937, and was a sales representative in the Denver and Pittsburgh district offices before entering the processing machinery department.

Elvin R. Danielson was appointed supervisor of priorities, succeeding the late Robert T. Ward.

Denver Equipment Company announces the appointment of two new distributors. Road Machinery Supply Company, 210-212 East First Street, Duluth, Minn., was named distributor for northern Wisconsin and northern Minnesota. Charter, Inc., 114 Front street, Ishpeming, Mich., was named to handle the upper peninsula region of Michigan.

Harold H. Heinecke has been named assistant manager of the commercial research department, General Machinery Division, Allis-Chalmers Manufacturing Company, according to a recent announcement.

Mr. Heinecke was manager of market research at the Perfex Corporation, Milwaukee, Wis., prior to joining Allis-Chalmers.

Appointment of Jack Cairns as a district manager for the Hyster Company has been announced. His territory will include portions of Florida, Alabama, North Carolina and Georgia.

Jack Cairns

Mr. Cairns was a Hyster salesman in Los Angeles, Calif., and previously was an administrative assistant both in the general and western sales departments in Portland. Prior to coming to Hyster he was with John Deere Tractor Company in Waterloo, Ia.

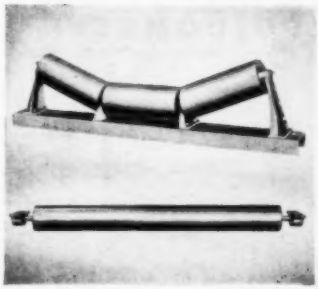
The Philadelphia office and warehouse of Hewitt-Robins Incorporated recently moved from 401 North Broad Street to Coral and Hagert Streets, Philadelphia 25, Pa. The new quarters, which serve as office and warehouse for the Hewitt Rubber and the Robins Conveyors divisions of the company, have improved delivery and stock facilities.

Edward L. Ryerson, chairman of the board, has announced that Everett D. Graff, chairman of the executive committee of Joseph T. Ryerson & Son, Inc., has retired from active service with the company. Mr. Graff has been associated with the company for 45 years and was president from 1937 through 1950. He will continue on the board of directors and also on the board of the Inland Steel Company.

H. B. Ressler

Harold B. Ressler, first vice-president, will replace Mr. Graff as chairman of the executive committee. A present Ryerson board member, he was also elected a member of the board of directors of the Inland Steel Company. Mr. Ressler has served in practically every capacity at the company during his 47 years of service.

HEWITT



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More features: Sturdy construction assured by Channel Base, Rigid Truss design—One-Shot Lubrication from either side—Triple Grease Seal—over-sized bearings.

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Greater Selection: Full range of styles and sizes to fit every job requirement.

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Trouble-free: Last longer under the rigors of on-the-job operation.

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Better availability: *What* you want *when* you want it. Strategically located stocks for your convenience throughout the country.

Select the right idler for your job. Write for Bulletin No. 142

HEWITT-ROBINS HR INCORPORATED

ROBINS CONVEYORS DIVISION

270 Passaic Avenue, Passaic, New Jersey

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STEP UP PRODUCTION
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Record output is a "natural" for the plant operator who appoints SCHAFFER Poidometers as his "Number 1 Scales."

Specially devised to handle raw and finished materials, Poidometers furnish valuable weight-information in the various processing stages of weighing, blending, feeding, mixing, recording and proportioning.

These premier units feature speed, precision and automatic operation, coupled with ease of handling and low-cost service life over many years.

Available with total weight recorders, and remote controls for showing and changing feed rate.

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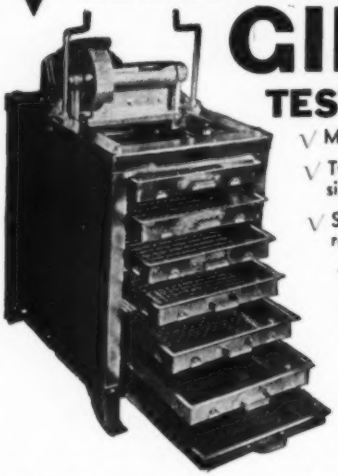

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Test-sizing sand, gravel, and similar materials through a GILSON Screen insures uniform products meeting all specifications.

Compact and smoothly operating, the GILSON Screen handles samples up to one cubic foot in five minutes or less.

Attachment available for handling 8" diameter sieves when sizing sand.

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J. H. W. Conklin

James H. W. Conklin has been appointed general sales manager of the Philadelphia Division, Yale & Towne Manufacturing Company. He succeeds James P. Kinney, who is taking over Yale & Towne's distributorship in Los Angeles and Southern California.

Mr. Conklin has had considerable experience in materials handling. For several years he was sales manager of the Industrial Truck Division, Clark Equipment Company. He comes to Yale & Towne from the sales department of the Pangborn Corporation, Hagerstown, Maryland.

Joseph H. Humberstone has been elected a vice-president of Air Reduction Company, Inc. He was formerly president of the company's Airco Equipment Manufacturing Division, and he has been succeeded in that capacity by Scott D. Baumer.

Albert E. Forster has been elected a vice-president and member of the executive committee of Hercules Powder Company. Paul Mayfield has been appointed general manager of the naval stores department, succeeding Mr. Forster.

The election of Mr. Forster to a vice-presidency fills a vacancy created by the retirement of Petrus W. Meyeringh because of ill health.

Mr. Forster became associated with Hercules Powder Company in 1925. He was employed in the sales, technical service, and production phases of the explosives department, and held executive positions in several Hercules plants and sales offices.

Mr. Mayfield joined Hercules in 1925 as a chemist at the company's experiment station. He was engaged for a time in sales and technical service work, developing markets for both cellulose and naval stores products. He was appointed to his present post, assistant general manager of the Naval Stores Department, in 1943.

Fairbanks, Morse and Company has awarded a contract to the S. Patti Construction Company of Kansas City, Mo., for the yard work for its new pump plant in Kansas City, Kans.

Donald C. Hansen has been named district sales representative for Ohio, Michigan, and western New York state, Woven Wire Fabrics Division, John A. Roebling's Sons Company.

Cleveland Contractors' Equipment Co., 12500 Berea Road, Cleveland, O., has been appointed sales agent in northeastern Ohio for Baldwin-Lima-Hamilton Corporation, Lima-Hamilton Division, Lima, O., manufacturers of power shovels, cranes, and draglines.

The Timken Roller Bearing Company has announced the appointment of R. G. Wingerter as assistant general manager and of J. R. Splitstone as district manager of the Automotive Sales Division. Both men will continue to make their headquarters at the general Automotive Sales Division offices at 3107 West Grand Boulevard, Detroit 2, Michigan.

Appointment of Elmer W. Easter as naval architect, engineering works division, has been announced by Dravo Corporation, Pittsburgh 25, Pa. Mr. Easter was associated with Dravo from 1915 until 1945, serving in the capacity of senior engineer of the Keystone Division. He is a member of the Society of Naval Architects and Marine Engineers.

American Bitumuls and Asphalt Company has announced the election of C. W. Turner as president, and has named C. W. Stewart to the newly-created position of vice-chairman of the board of directors.

The Timken Roller Bearing Company has announced the promotion of George J. Muntean to the position of assistant superintendent of the Canton bearing factory.

The appointment of George E. Goodrich to the position of assistant manager, industrial department, of Westinghouse Electric Corporation's Apparatus Division was announced recently.

Bob Drumm has been appointed to represent Balwin-Lima-Hamilton Corporation's line of power shovels and cranes in Kentucky, southern Ohio, and West Virginia. Mr. Drumm was formerly employed in the sales department of the Emmett C. Watson Company, Louisville, Ky. Mr. Drumm's headquarters will be at 5024 South Third Street, Louisville, Ky.

J. P. Blaul

J. P. Blaul was elected president of Diamond Iron Works, Inc., and Mahr Manufacturing Company Division, following the resignation of L. J. Reay. Mr. Reay will continue to serve as a member of the board of directors.

Mr. Blaul joined the Diamond Iron Works staff early in 1951. Prior to this he had owned and operated a successful business of his own.

Diamond Iron Works and its Mahr Division manufacture rock-crushing and processing equipment.

W. G. Brainerd has been appointed sales manager of the J. B. Ehrsam and Sons Manufacturing Company, Enterprise, Kan., according to a recent announcement.

EVANSTEEL

Super Strength Parts are "tops" for resisting

SHOCK • WEAR • ABRASION • BREAKAGE

← EVANSTEEL Heat-Treated Hammers have proved far superior to any other material for pulverizing purposes.

EVANSTEEL Dipper Teeth give extra long service even in digging the toughest material. →

EVANSTEEL Pug Mill Knives are highly wear resistant, yet not brittle. ←

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For high-strength parts . . . for an *extra* margin of safety . . . for weight-saving sections . . . use dependable EVANSTEEL. This chrome-nickel alloy has a tensile strength after annealing that averages up to 60% greater than ordinary carbon steel.

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Korb-Pettit Wire Screens are not only first quality in material and workmanship but are engineered for the job involved. Available in High Carbon Spring Steel and Oil Tempered Spring Steel for extreme abrasion resistance. Designed for all types of vibrators and rotary equipment.

Wire Screens,
Spiral Woven Wire
Conveyor Belts,
Special Purpose
Conveyors
designed & manufactured
Wire Partitions,
Machine and Window
Guards, Cages,
Enclosures, Grilles, etc.

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NO. 36

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Flex-Valves have solved thousands of valving headaches —in as many plants as there have been installations made. They can handle anything that flows, including aerated or fluidized solids. They close bubble-tight over ⅛" solids. Open, the flow is straight-in-line with the service piping, and completely unobstructed. There are no moving parts in contact with the lading fluid. Available in both natural and synthetic materials for every corrosive or abrasive service.

Complete details on this unique principle of control valving in slip-on, flanged, and air-motor operated types are available on request. Ask for **Bulletin 500***—without obligation, of course.*

Farris FLEXIBLE VALVE CORP.

241 COMMERCIAL AVE. • PALISADES PARK, N. J.

1192

Ceco Steel Products Corporation has established six two-year engineering scholarships divided equally among the University of Illinois, Purdue University, and Illinois Institute of Technology, it has been announced. Each scholarship is for the junior and senior years and is worth $1,000.

Students will be selected on the basis of ability and need as determined by a faculty committee. The first six scholarships will be awarded in May, 1952, for the two college years starting in September. It is planned to award six additional two-year scholarships each year.

Baldwin-Lima-Hamilton Corporation, Lima-Hamilton Division, Lima, O., has appointed Paul R. Ehrgott assistant to the resident vice-president. In addition to his duties as assistant to the vice-president, Mr. Ehrgott will also serve as sales manager in charge of all sales of shovels of 3-yd. capacity and larger.

J. W. Hardesty has been appointed sales manager of small shovels and cranes. He will be in charge of domestic sales of all shovels and cranes, up to and including 2½-yd. capacity. Prior to his appointment as sales manager, Mr. Hardesty was district manager of the territory including northern Ohio, Indiana, Illinois, Michigan, Missouri, and Kansas.

J. B. Mendelsohn

Julian B. Mendelsohn has been named sales manager of the Multi-Wall Sack Department of the Hudson Pulp & Paper Corporation. Prior to his new appointment, Mr. Mendelsohn was division manager of the Metropolitan New York Division.

Hudson's multi-wall sack production facilities have been stepped up by the addition of more woodlands, new pulp-producing facilities, a new paper machine and new converting facilities. All additions were made to Hudson's mill in Palatka, Fla.

J. W. Mohler, assistant director of sales for Caterpillar Tractor Co., will become deputy director of the Construction Machinery Division of NPA.

He will serve the federal agency for one year, beginning March 15. During World War II he was on similar leave from Caterpillar to the War Production Board, where he became director of the Production Division and assistant to the vice-chairman.

W. S. Zeigler, now manager of Caterpillar's Eastern Sales Division, will take over the duties of assistant director of sales during Mr. Mohler's absence. Mr. Zeigler's present position will go to J. A. Justeson, now assistant manager of the Western Sales Division. The new divisional assistant will be Frank McNamara, who is a Caterpillar district representative on the West Coast.

legal decisions

By LEO T. PARKER
Attorney at Law
Cincinnati, Ohio

During the last few months readers presented interesting legal questions, the answers to which will assist them and other readers to avoid expensive law suits. Therefore, for the benefit of all readers of PIT AND QUARRY, the writer reviewed leading higher court cases that will verify hereinafter explanations of important law and answers to many of these questions.

Leased Equipment

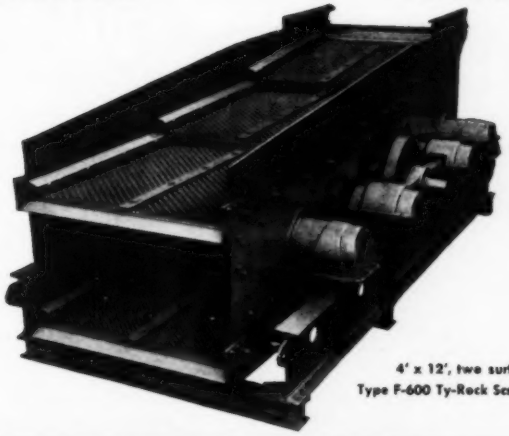
Recently a reader wrote an interesting letter as follows: "Our sand and gravel company hires motor trucks. Is a clause in a lease contract valid under which the owner of these trucks can assume liability for all injuries caused by operation of the trucks? Suppose our company carries insurance, does this fact relieve the lessor or owner of the trucks?"

According to a late higher court decision, the answer to the first question is yes, and the answer to the last question is no.

For example, in *Consolidated v. Moore*, 229 Pac. (2d) 882, the testimony showed facts as follows: The Consolidated signed a lease contract with one Moore by which Moore leased his motor truck to Consolidated. Among other things, the lease contract contained this clause: "It is further mutually understood between these parties that lessor (Moore) agrees to indemnify and save Consolidated harmless in case of any and all injury or damage to persons or property resulting from the operation of the said equipment during the period of this lease."

On a trip the truck collided with the vehicle of one Lundberg, who was seriously injured. In subsequent litigation, the higher court held that the abovementioned clause in the lease contract is sufficiently broad to relieve the Consolidated from liability for injuries caused by drivers employed by Moore. This court said:

YOU CAN DEPEND ON
TY-ROCK SCREENS
BALANCED RUGGED



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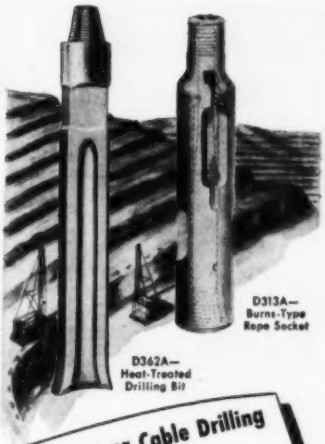
CLEVELAND 14, OHIO
Manufacturers of Woven Wire Screens and Screening Machinery



D313A—
Burns-Type
Rope Socket

D362A—
Heat-Treated
Drilling Bit

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of
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• PROSPECT HOLES
• SAMPLING
SAFE • EFFICIENT • ECONOMICAL

Spang Churn or Cable Tools are top performers in their fields for drilling test holes when prospecting or sampling . . . drilling blast holes for fragmentation of minerals or overburden . . . drilling and reaming escape, dewatering and ventilating holes . . . and drilling wells for other purposes. Fifty years' experience serving oil, water-well, mining and quarrying operations assures their value.

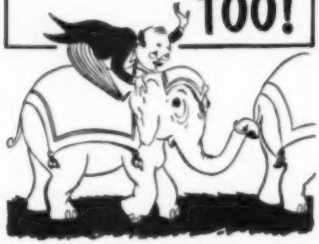
D606—Reamer-Type
Pilot Bit

LARGE BITS
for pilot hole drilling and stage enlargement reaming of dewatering, ventilation and escape holes.

D370F—Prefabricated
Star Bit

SPANG CABLE TOOLS
made by
SPANG & CO., BUTLER, PA.
for
• SHOT BLAST HOLES • WELL DRILLING
• PROSPECT DRILLING • SAMPLING

LE-HI Makes a Good Connection TOO!



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Wherever hose is used there is a LE-HI hose coupling to match—from small tubing to large industrial applications.... The complete LE-HI line includes:

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SERIES 100

SERIES 600

- Drilling Hose Couplings
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. . . plus complete lines of hose clamps, air valves and manifolds.

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"Old Doc" says: "Write now for your free copy of the complete LE-HI catalog"

HOSE ACCESSORIES COMPANY
1712 Lehigh Ave.
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LE-HI Makes a Good Connection!

LE-HI
HIGH and LOW PRESSURE
HOSE COUPLINGS
TRADEMARK REGISTERED

"The fact remains that the contract is broad enough to cover all third party injuries 'resulting from the operation of said equipment', without regard to which party's negligence caused it or how their relationship was designated."

This court also held that Moore must pay the loss although Consolidated carries adequate insurance. The court said:

"By his contract the appellant (Moore) bound himself to pay the loss. This cause of action is not defeated by the insurance company's payment of the judgment."

Validity of Mechanic's Lien

Recently a reader asked: "If a contractor takes a contract on cost-plus, can the property owner refuse payment on the grounds that the contractor expended too much money to complete the job? Can the contractor have a mechanic's lien?"

Under an ordinary cost-plus contract the property owner cannot refuse payment to the contractor. Generally speaking, a contractor may have a valid mechanic's lien on real property to secure payment for labor and materials unless the property owner convinces the jury that the contractor defaulted in completing the work.

For example, in *Blue Ribbon Company v. Schnarr*, 88 N. E. (2d) 779, the testimony showed that a contractor refused to give a property owner a definite contract price on the proposed work because of the unsettled material and labor conditions. The contractor agreed to perform the work according to the plans and specifications on a basis of cost-plus 10 percent.

During the course of the work the property owner ordered many changes in the original plans. When the work was completed, payment was refused. The contractor filed a mechanic's lien.

It was contended by the property owner that the contractor's price was too high and also that he had not completed the work in a satisfactory manner. Since the property owner failed to convince the jury that its contentions were correct, the higher court held the contractor's mechanic's lien valid, and ordered the property owner to pay the contractor.

Contractor May Depend on Specifications

A few days ago a reader wrote an interesting letter, as follows: "Your help in assisting us to win a pending suit will be very much appreciated. Our company was awarded a contract by a state as the lowest bidder on a public project. We based our bid on information contained in the specifications as to soil and general conditions. Before the job was completed, we did $28,000 additional work. Were we within our rights in relying exclusively on the specifications rather than on information in the blueprints?"

The answer is that you can rely exclusively on the specifications.

For example, in *Hersey Gravel Company v. State*, 9 N. W. (2d) 567, the

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testimony showed that a state advertised for bids for the construction of public work. A contractor obtained plans and specifications from the State's Highway Department and later submitted his bid without carefully examining the blueprints which contained important notations of soil conditions upon which to base a bid. This contract and specifications called for 373,086 cu. yd. of earth to be excavated and 17,007 cu. yd. of rock. The contractor had to excavate an additional 32,175 cu. yd. of earth and additional 11,390.08 cu. yd. of rock.

The state refused extra payment and argued that if the contractor had depended upon the blueprints he would not have submitted so low a bid. The state proved that the blueprints showed actual subsoil conditions.

The higher court awarded the contractor $59,622 extra payment for the additional excavation, saying that the state was liable for misrepresentations in the plans and specifications as to actual work to be done.

And again in *State v. Spearin*, 248 U. S. 132, the Supreme Court of the United States held that the advice to contractors to visit the proposed site and inform themselves of the "actual conditions of a proposed undertaking", will *not* relieve the state, county, or city from liability for defects or misrepresentations in the plans and specifications.

Municipal Officials Exceed Authority

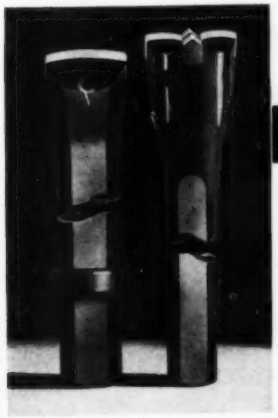
A reader asked this question: "If city officials buy materials, can the seller always compel the city to pay for the *used* materials?"

According to a late higher court decision, the answer is no. This is so because the higher courts hold that persons who contract to supply materials or perform work for a city must inform themselves of the authority and power of the city officials to make legal and enforceable contracts.

For instance, in the leading case of *Newberg v. Warren Company*, 278 Pac. 96, it was disclosed that certain city officials contracted to pay a sand-and-gravel company for sand, gravel, and rock from assessments levied on the property owners. Some of the taxpayers refused to pay the assessments.

The sand-and-gravel company sued the city for the balance due on the account. However, for the reason that the city charter specified that money for similar purposes should be obtained by levying assessments against the property owners, the court held the city not liable for payment if the money could not be obtained from the assessments. The court said:

"The city did not guarantee that the property levied against would, at public sale, bring the full amount of the assessments. It only contracted to 'set the legal machinery in motion' and to exercise reasonable diligence to obtain funds with which to pay the warrants issued. . . . The seller was bound to take cognizance of the powers vested in the city by its charter."



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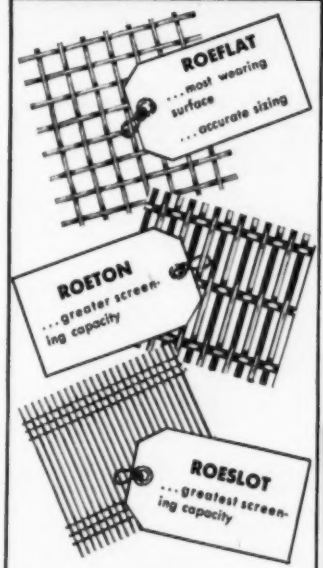

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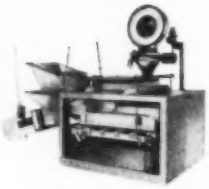

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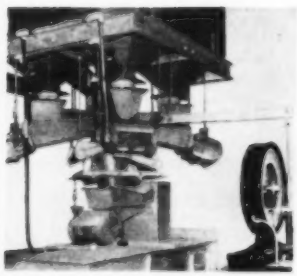

Vibrators on bins and hoppers keep the materials free-flowing. The vibratory feeders automatically filling scale hoppers to exact weight and discharging onto secondary vibrating feeders, smoothly emptying each accurately weighed batched into mixers, blenders, belt conveyors, etc.

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Cannot Cancel Contract Without Notice

A few days ago a reader wrote in part as follows: "We took a contract from a state to supply specified rock and other materials. The contract has a clause that the state 'may cancel the contract at any time'. Without giving us any notice at all the state cancelled the contract and left us with several thousand dollars' worth of these special materials on our hands. Can we sue the state and compel it to pay us for these materials?"

According to a late higher court decision, the answer is yes. This is so because although a contract provides that the purchaser may cancel the contract "at any time", the higher courts hold that if the purchaser fails to give the seller a "reasonable" notice, the purchaser remains obligated under the contract.

For illustration, in *Sylvan Crest Sand and Gravel Company v. United States*, 150 Fed. (2d) 642, it was shown that the United States invited bids on trap rock needed for a public project.

A quarry corporation submitted four bids for different sized screenings of trap rock and each bid was accepted by the assistant state procurement officer. An important clause in each contract stated that the government could cancel the contract "at any time".

Later these contracts were cancelled and the quarry corporation sued the United States Government for the profits it would have earned had the government not cancelled these contracts. Although the lower court held the government not liable, the higher court reversed the verdict and said:

"No one can read the document as a whole without concluding that the parties intended a contract to result from the Bid and the Government's acceptance. If the United States did not so intend, it certainly set a skillful trap for unwary bidders. . . . We believe that the reasonable interpretation of the document is as follows: 'We accept your offer to deliver within a reasonable time, and we promise to take the rock and pay the price unless we give you notice of cancellation within a reasonable time'."

Value of Verbal Promises

Recently a reader asked: "Is a verbal promise effective when denied by a party to the written contract?"

The answer is that the courts hold that ordinarily a written contract cannot be varied by verbal agreements.

For example, in *Thunder Bay Quarries Company v. Pollard*, 3 N. W. (2d) 316, it was disclosed that a company obtained a written order from a purchaser for 30,000 tons of crushed stone of an odd size, to be used for pavement of alleys. The written contract stated that the company would furnish the stone at 90 cents per ton, less 5 cents discount if payment was made in 30 days. Later the purchaser claimed that the time of payment was verbally extended by officials of the quarry company, which re-

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fused to allow the purchaser the 5 percent discount on accounts not paid within 30 days. The lower court refused to hold that the purchaser was entitled to this 5 percent discount. The higher court upheld the verdict.

This court explained that a verbal agreement *never* can be valid to contradict a written contract.

Liability for Breach

Recently another reader asked: "What are the legal rights of a purchaser when a seller breaches his contract to deliver merchandise or nonmetallic materials?"

The answer is as follows: If a sale contract is breached by the seller, the buyer has several remedies. He may (a) affirm the sale, notwithstanding the seller's breach, and proceed to carry out his part of the agreement; (b) or he may rescind the sale contract and return the merchandise already received and recover all money already paid on the purchase price; (c) or he may affirm the sale contract and if he has been damaged by the breach of the contract by the seller, he may have credit for such damages if the seller sues for the balance of the purchase price; (d) or he may sue the seller and receive a verdict for full damages. The purchaser must, however, "elect" one of these various remedies and is bound by his election.

Income Tax Law

A reader asked this question: "What can I deduct from my gross income when filing my federal income tax return? This year I want to start in right and keep records of these things as maybe I can save myself some money."

The answer to this question is important to all readers, and I shall endeavor to answer it so that all persons will know exactly what to deduct and what is necessary in order that the Commissioner of Internal Revenue will approve the deductions. This is important because if a tax payer fails to keep proper records his deductions will not be approved.

First, the tax payer should keep all bills in order to prove that the money he deducts actually was spent. Also a book whether small or large should be kept for reference purposes if the agent of the Internal Revenue department calls you into the office or comes to inspect your records.

Any individual can deduct from his gross income, as is well known, various charitable contributions, also gifts to religious, educational, and fraternal organizations if the latter will use the gifts for charitable purposes. An individual may deduct all taxes paid to the state, such as taxes paid on the home you live in, taxes on personal property and chattels, and other taxes paid to the state; but he may not deduct any taxes paid to the United States for theatre admissions, telephone service, furs, jewelry, and other excise taxes. You may deduct interest paid on a mortgage on your home; also interest on your personal loans, and other debts. You may deduct all losses from casualties such as fire, theft, storm, explosions, etc.; but you may not deduct any losses of this kind that are not "sud-

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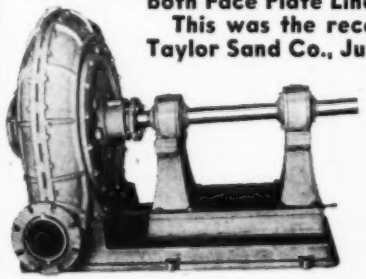

6" heavy duty, bottom discharge, "Tell-Tale" Centrifugal Sand and Gravel Pump, equipped with Ball Bearings and Patented Split Shell.

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C-30—The ideal electrode for building up wearing surfaces which must later be machined. Weld metal deposit will average 215 BHN (R_B 96) which gives much greater wear resistance than mild steel deposits. Weld is completely free of pinholes, slag traps, or heat checks and machines readily. Recommended for shaft build-up, steel mill pods, spindles, back-up chucks, and other similar applications.

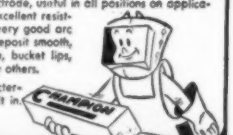
HARD DEVIL—For economical build-up, this straight high carbon type of electrode gives smooth beads, low spatter loss, easy slag removal with a hardness of 255 to 400 BHN, dependent on base material. For building up Car Wheels, Tractor Shoes, Conveyor Equipment, Crusher Rolls, Gear Teeth, etc.

RAILENDER—For the repair of battered rail ends, Railender gives a dense, homogeneous deposit with an excellent bond to the rail. The weld shows a hardness of about 300 BHN, which gives long service life. Weld beads are smooth, even, and flow together well, requiring a minimum amount of finishing.

WEAR DEVIL C—Excellent for build-up on parts which require a balance between wear and wear resistance such as track links and rollers used in earth-moving equipment. Hardness of the deposit is 300 to 320 BHN as welded. Wear Devil C has excellent arc stability, low spatter, and deposits smooth welds in any position.

TOUGH DEVIL—Champion High Manganese Electrodes (11-13% Manganese) are available in two types: No. 1, bare or coated, contains 3½% Nickel, and No. 2, bare or coated, is stabilized with Molybdenum. Deposits average 10 to 20 R_c as welded and will work harden to 52 R_c. Tough Devil Electrodes are used for the repair of manganese castings, build-up of frogs and crossings, dipper teeth, etc.

WEAR DEVIL A—An excellent alloy, all-purpose hard surfacing electrode, useful in all positions on applications requiring a hardness of 495-555 BHN (50-56 R_c). Deposit shows excellent resistance to abrasion and moderate impact. Wear Devil A Electrodes have very good arc stability on both AC and DC, low spatter loss, easy slag removal and deposit smooth, even beads. Recommended for rock-crushing equipment, dipper teeth, bucket lips, grappling hooks, agricultural machinery, gears and pinion teeth and many others.



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den". For instance, in one case an official of a quarry company purchased a home and later found that it was infested with termites. The court refused to allow him to deduct the loss because it was not a "sudden" casualty.

An individual who leaves his home town or city over night for purposes of business may deduct his travel, hotel, and meal expenses; but if he does not stay over night he may not deduct expenses for meals, although he may deduct the traveling expenses. An individual may never deduct his traveling expenses from his work to his home, and he may not make such deductions although he lives in one city and works in another and may stay over night in the latter city.

As far as medical expenses are concerned, no deductions are allowable unless the tax payer's gross income exceeds an amount whereby 5 percent of this gross income is taken into consideration. If, for instance, your gross income is $5,000, you take 5 percent of this, which is $250. If your medical, dental, drug, etc., expenses exceed this amount of $250, you may deduct all such expenses over $250. The courts hold that if your physician recommends that you take a trip, or go to a different climate to be cured, these are deductible expenses; but you may not deduct travel and the like expenses merely because your physician believes you will benefit or be assisted to regain your health by the trip or change of climate.

Strictly Construed

Modern higher courts consistently hold that state laws which give power and authority to a city to construct local improvements and levy assessments for payment must be *strictly* construed. In other words, every reasonable doubt must be resolved against the city and in favor of the taxpayer.

For example, in *Besack et al.* v. *City of Beatrice*, 47 N. W. (2d) 356, the higher court held that a city could not levy "special" assessments upon a sand-and-gravel company's realty located within the boundaries of the city to defray the cost of a sewer constructed in another district. This court said:

"We conclude that insofar as the assessments here involved uniformly included the cost of construction of that part of the sewer situated outside the boundaries of district No. 60, was, and is void, and as such should be uniformly excluded from the assessments."

This court held further that if a state law or city ordinance or city charter designates the location of real property which may be assessed for local improvements, such assessments cannot be levied upon property not so located, even though such property might be benefited by the improvement.

Edward H. Altendorf recently rounded out 43 years of service with Universal Atlas Cement at Independence, Kan., having worked for the company since March 18, 1908. During this 43-year span he worked steadily without one lost-time accident.

traffic news

CENTRAL TERRITORY RAILROADS FREIGHT TRAFFIC COMMITTEE

Docket 88641 (1)—Proposed to establish on crushed stone, in open-top cars, carloads, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Soldiers Home, O., to Shelby, O., 66 cents net ton. To meet motor truck competition.

Docket 88687 (2)—Proposed to establish on limestone, natural, ground or pulverized, minimum weight 60,000 lb. from Conneaut, O., to Toledo, O.: in open-top cars not protected by tarpaulin or other protective covering, $2.62 per net ton; in closed cars or open-top cars protected by tarpaulin or other protective covering, $3.11 per net ton. Rates named herein will apply also on limestone, ground or pulverized, when containing not in excess of 3 percent of other minerals, either physically or otherwise added.

GENERAL FREIGHT TRAFFIC COMMITTEE EASTERN RAILROADS

Bulletin G-5219 (Shipper)—Proposed to establish on slag, crude (product of iron and steel furnaces), in bulk, in open-top equipment, carload minimum weight 90 percent of marked capacity of car from Buffalo, N. Y., to Brockway, Pa., $2.07 per net ton, subject to ExParte 175 increase.

Bulletin G-5346 (Carrier)—Sand (except naturally-bonded, molding, ground, or pulverized sand) or gravel in open-top equipment, carload minimum weight 90 percent of marked capacity of car, etc., from Omega, O., to Alloy, W. Va., $2.07 per net ton, subject to ExParte 175 increase.

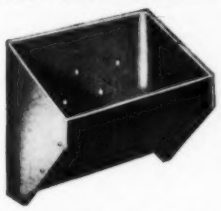
Bulletin G 5355 (Carrier)—Proposed to establish on sand (except naturally-bonded, molding, ground, or pulverized sand) or gravel in open-top equipment, carload minimum weight 90 percent of marked capacity of car from Omega, O., to Niagara Falls and Suspension Bridge, N. Y., $3.88 per net ton, subject to Ex-Parte 175 increase.

ILLINOIS FREIGHT ASSOCIATION

Docket IRC 511-1108—Stone, broken, crushed or ground, in closed cars, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full visible capacity, actual weight will apply from Hannibal, Mo., to Taylor, Ill.

". . . must order more

STANDARD ELEVATOR BUCKETS"



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When you own a Sauerman Power Drag Scraper you can tackle any job of gravel excavation, stripping, stockpiling and similar work with the assurance of producing big output at minimum expense.

A Sauerman scraper digs a heaping load, hauls this load to any point within its operating radius, dumps automatically, then returns at high speed to dig another load.

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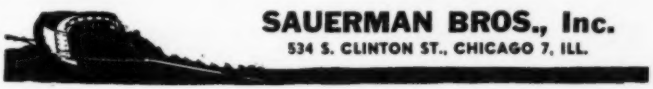
Sauerman scrapers have been "tops" in the field of long range excavators for over forty years. Whether you buy one of our smallest machines or one of our largest, you obtain an expertly engineered unit guaranteed to take care of your particular work economically and to give you long, trouble-free service.

Write for the new 24-page Sauerman scraper catalog and tell us about your material handling problems.

Cement mill uses a simple setup of a small Sauerman Scraper to store hot clinker on ground facing grinding mill and to reclaim the cooled clinker. Scraper tail-block hooks into U-bolts anchored in building wall.

On a job of stripping deep overburden from a deposit over 1,000 ft. wide, the Sauerman scraper bucket is provided with a carrier which runs on a track cable. This speeds up the operating cycle.



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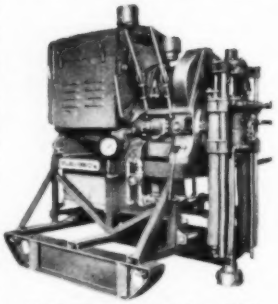


Model 40-C Diamond Core Drilling Machine, with Gasoline Engine Power Unit and Oil-Operated Hydraulic Swivelhead.

CONTRACT DRILLING

Besides being manufacturers we are one of the oldest and largest contractors for any type of Core Drilling, including Grout Holes and Grouting. Sixty years of successful experience, superior equipment and ample financial resources, assure satisfactory results. Estimates submitted promptly on request.

"TRUCAST" BORTZ DIAMOND BITS

have proved their superiority for years in all types of rock formation. Available in a wide variety of standard and special types ranging from 1½" to 7¾" in diameter. All bits set with first-grade African bortz unless otherwise specified. Bulletin 44-A gives complete information.

SPRAGUE & HENWOOD, Inc. Dept. K Scranton 2, Penna.

See our four-page insert in the Mining Catalogs

Present: $1.84 per net ton; proposed: $1.74 per net ton, subject to X-175 increase.

Docket IRC 511-1109—Limestone or stone, ground or pulverized, carload from and to IRC territory. Proposed: Amend agency and individual lines' tariffs naming rates on stone or limestone, ground or pulverized, by the addition of a note reading as follows:

"Note: Rates named herein will also apply on limestone or stone, ground or pulverized, when containing not in excess of 3 percent of other minerals either physically or otherwise added."

Docket IRC 511-1110—Limestone, natural, ground or pulverized, unburned, carload minimum weight 60,000 lb. from Valmeyer, Ill., to Rockford, O. Proposed: 371 cents per net ton in open-top cars not protected by tarpaulin or other protective coverings; 420 cents per net ton in closed cars or open-top cars protected by tarpaulin or other protective coverings, subject to X-175-A.

NORTH PACIFIC COAST FREIGHT BUREAU DOCKETS

Docket NC-2351 (S)—Proposed to establish on limestone, carload, in gondola cars, Vancouver and New Westminster, B. C., to Bellingham, Wash., 90 cents per hundredweight, minimum 50 tons.

Docket NC-1674 (Supplement 1) (S)—Request to establish on limestone, carload, in gondola cars, Vancouver and New Westminster, B. C., to Bellingham, Wash., 90 cents per hundredweight, minimum 50 tons.

Docket NC-1949 (Sup. 2)—Request for reduced rates, minimum of 50 tons on limestone, carload, from Cooper, Wash., to Mapleton, Coos Bay, and Coquille, Ore.

NC-1674 (Sup. 1) (Amended)—Request for rate of 90 cents per net ton, minimum of 50 tons, on limestone, carload, in gondola cars, Vancouver and New Westminster, B. C., to Bellingham, Wash.

PACIFIC SOUTHCOAST FREIGHT BUREAU PROPOSALS

Docket 2400 (S)—It has been requested to amend minimum weight as applicable to rates on rock, lime, carload, from Sloan and Arrolime, Nev., to Kaiser and Fontana, Calif., to read 80,000 lb., applicable to rates in open-top cars, not protected by tarpaulin or other protective covering.

Docket 2401 (S)—Request rate of 13 cents per hundredweight, minimum of 50 tons, on rock, lime, carload, from Sloan and Arrolime, Nev., to Torrance, Calif.

WEEKLY DOCKET AND STATUS REPORT OF PRIOR SOUTHERN FREIGHT ASSOCIATION PROPOSALS

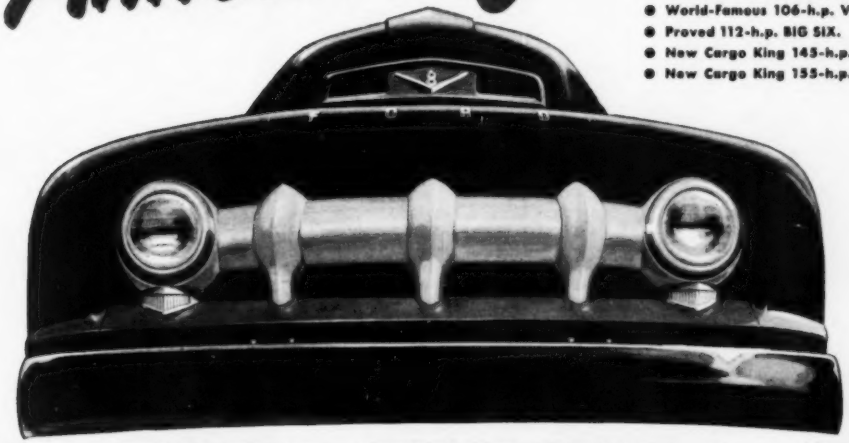
Docket A 9347 (c)—Proposed to establish on gravel, carload, in open-top cars, 90 percent of marked car capacity, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Gravelton, N. C., to Brilliant, O., 575 cents net ton, not subject to X-162-6-8.

Docket A 9399 (c)—Establish proposed rate on stone, crushed, in closed cars, carload 40 tons, except that when loaded to full cubical capacity, actual weight will apply to E. St. Louis, Ill., applying only to Western Trunk Line Territory from Dolcito, 290 cents and Gantt's Quarry, Ala., $3.00 per net ton.

Announcing

NOW! FIVE GREAT FORD TRUCK ENGINES!

- New 101-h.p. Cost Clipper Six.
- World-Famous 106-h.p. V-8.
- Proved 112-h.p. BIG SIX.
- New Cargo King 145-h.p. V-8.
- New Cargo King 155-h.p. V-8.



New FORD TRUCKS for '52

Engineered for modern, low-cost Speed Hauling

NOW FIVE great Ford Truck engines permit better "tailoring" of truck power to your specific hauling job! Over 275 series power combinations. Only FORD in the low-price field gives you so many power choices, series for series, in ½-ton to 3-ton trucks!

3 NEW ULTRA-MODERN HIGH-COMPRESSION, LOW-FRICTION, OVERHEAD-VALVE ENGINES!

New Ford short-stroke LOW-FRICTION design saves up to 14% on gas! Two V-8's, one Six! Fully-proved! High-compression punch with *regular* gas!

EVERY drop filtered EVERY time around

NEW FULL-FLOW OIL FILTER

Ford's new Full-Flow oil filter removes harmful dirt and abrasives from *every* drop of oil. Result: engine life is prolonged, ring and cylinder wear reduced.

IMPROVED POWER PILOT

Another Ford exclusive in the low-price field! This proved fuel-feeding and fuel-firing system gives you the most power from the least gas.

Availability of equipment, accessories and trim as illustrated is dependent on material supply conditions.

FREE

MAIL THIS COUPON TODAY!
FORD Division of FORD MOTOR COMPANY
3253 Schaefer Road, Dearborn, Michigan

Please send me without charge or obligation, complete details on the new Ford Trucks for '52 and the 5 great Ford Truck Engines!

Full Line ☐ Light Models ☐ Heavy Duty Models ☐ Extra Heavy Duty Models ☐

Name_____
(Please print plainly)

Address_____

City_____ State_____

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See "Ford Festival" starring James Melton on NBC-TV

You're Sure with Merrick

FOR Positive Controlled Feed by Weight of Sand Gravel, Lime Clinker, Gypsum or other materials to Process—

Use the Feedoweight

Merrick Scale Mfg. Co.
Passaic, New Jersey

on the world's
BIGGEST
wire rope jobs...

experienced riggers demand
GENUINE
CROSBY
CLIPS

Drop-forged, hot-dip galvanized wire rope fasteners

SIZES FOR ALL WIRE ROPE

DISTRIBUTORS EVERYWHERE

AMERICAN HOIST & DERRICK CO.
ST. PAUL 1, MINNESOTA

WESTERN TRUNK LINE NEW APPLICATIONS

Docket E-41-1517 (S)—Proposed to establish rate of 15 cents per 100 lb., minimum weight 90 percent of marked capacity of car, but not less than 54,000 lb. on limestone, crushed or ground, in closed cars or in open-top cars protected by tarpaulin or other protective covering, Weeping Water, Neb., to stations in Illinois and Wisconsin taking Group 3 rate base number under column 6 of Western Trunk Line Territorial Directory 1-D.

Docket E-41-1526 (S)—Proposed to establish on sand, gravel, or crushed stone, carload minimum weight 90 percent of marked capacity of car, from Golden, Colo., to Roscoe, Neb., $2.86 per ton of 2,000 lb., subject to ExParte 175.

Docket X-E-1527 (S)—Proposed to establish on stone, broken, crushed, or ground, carload, minimum weight marked capacity of car used, subject to item 70 of C.B.&Q. G.F.O. 16060-Q-ICC 20029, Gillette, Wyo., also Minturn, Wyo., located one mile east of Wyodak, Wyo., to Rapid City, S. D., 351 cents per ton, subject only to X-173-A.

Twist Pulley Turns Belt Over To Insure Clean Operation

A belt conveyor system that turns the belt over at the head and tail ends has been announced. This system keeps the conveyor surface of the belt always up, both on the conveying and the return run. Wet or sticky materials are not in contact with the return idlers and do not build up to cause trouble.

The "Turnover" system of belt operation was developed jointly by the B. F. Goodrich Company, Akron, O., and the Chain Belt Company, Milwaukee, Wis. At each end of the conveyor a special twist pulley is installed that turns the belt 180 deg. These twists insure that the same surface of the belt is kept uppermost on both runs. Only the clean, lower surface is in contact with the idlers at any time. Spillage is conveyed to the tail end and automatically dumped for subsequent reclaiming.

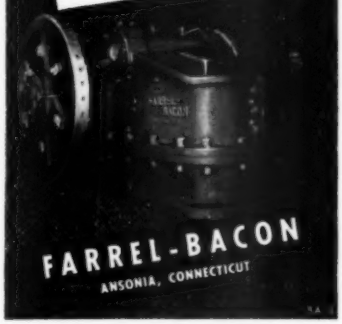
This system is said to make possible year round operations in handling damp materials as the freezing of the return idlers is prevented. Conveyor life is increased in handling corrosive materials as they are kept from coming in contact with the metal of the idlers and frame.

Ideal Cement Co. Workers Get Voluntary Pay Raise

All employees of the Ideal Cement Company, Denver, Colo., paid on an hourly basis have been awarded a three-cents-per-hour cost-of-living increase, according to Chris Dobbins, executive vice-president. The increase was decided upon voluntarily by the company after the Wage Stabilization Board recently ruled that wage increases up to a certain amount could be made without approval of the board. Workers in the Portland and Boettcher, Colo., plans and the company's other plants in Western and Southwestern states also will receive the increase.

FARREL-BACON
JAW CRUSHERS
SIZES 60"x48" to 10"x7"

Optional design features include: (1) Meehanite frame, sectionalized when necessary; (2) removable water-cooled bearings; (3) improved design of swing-jaw bearing; (4) force-feed oil lubrication, or circulating system if desired; (5) split flywheels; (6) flat or V-belt drive. *Write for further details or engineering assistance.*



FARREL-BACON
ANSONIA, CONNECTICUT

IT COSTS NO MORE — TO USE THE BEST

REPLACE WITH
"Indian Brand"

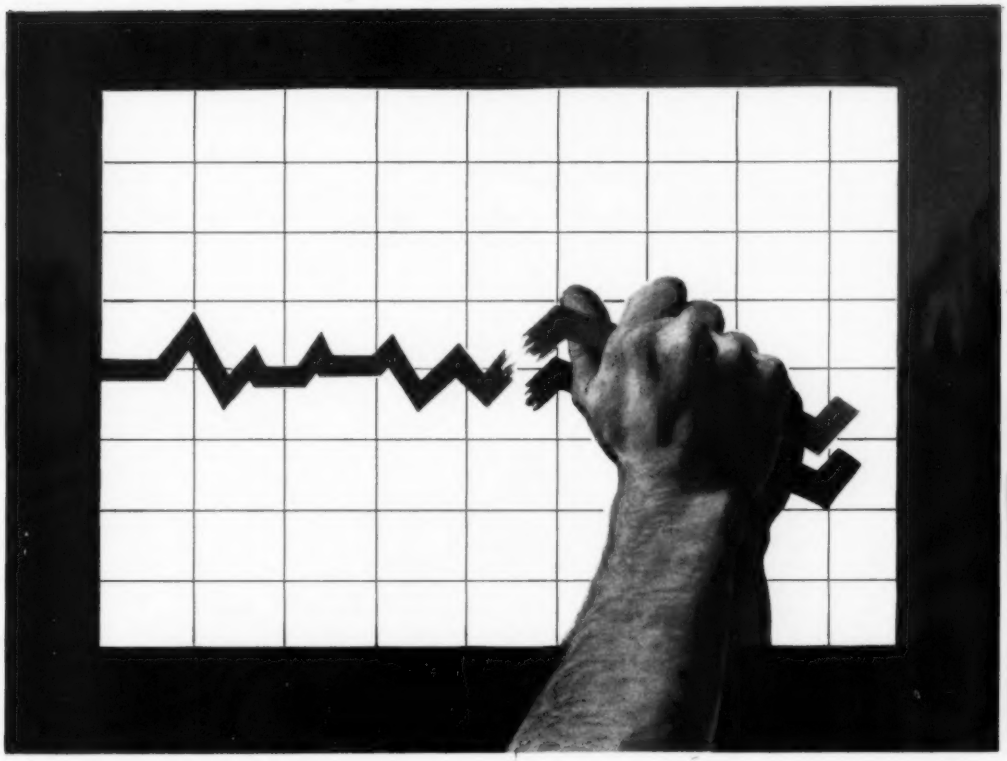
Shovel Dippers
Dipper Teeth
Shovel Treads

Crusher Jaw Plates
Mantles—Concaves
Bowl Liners
Roll Shells

Pulverizer Hammers
Grate Bars—Breaker Plates

Ball Mill Liners
Screen Plates

The Frog, Switch & Mfg. Co. CARLISLE, PA.
ESTABLISHED 1881



Irreplaceable...production lost in idle kilns!

You can cut down on hot zone replacements which steal precious production time when you install Permanente Periclase-Chrome refractory brick.

That's because patented Permanente Periclase-Chrome brick is *especially designed* for hot zone linings in cement kilns.

With Permanente Periclase-Chrome brick you get a lining of maximum refractoriness that is highly resistant to chemical attack by cement clinker. It takes a good coating, holds it well, and has great resistance to thermal shock.

Verified performance records of kilns throughout the country show that Permanente Periclase-Chrome brick have withstood as many as *17 shutdowns* for various causes *without any loss of brick due to spalling.*

The superiority of Permanente Periclase-Chrome brick is the result of experience gained by Kaiser Chemicals in more than 10 years of providing specialized brick to the cement industry.

This experience is available to you—including installation assistance—at no extra cost. Standard brick sizes supplied in both burned and chemically bonded forms. We have expanded to better take care of your needs. Call or write principal sales offices: *Chemical Division*, Kaiser Aluminum & Chemical Sales, Inc., 1924 Broadway, Oakland 12, California. First National Tower, Akron 8, Ohio.

Kaiser Chemicals

Pioneers in Modern Basic Refractories

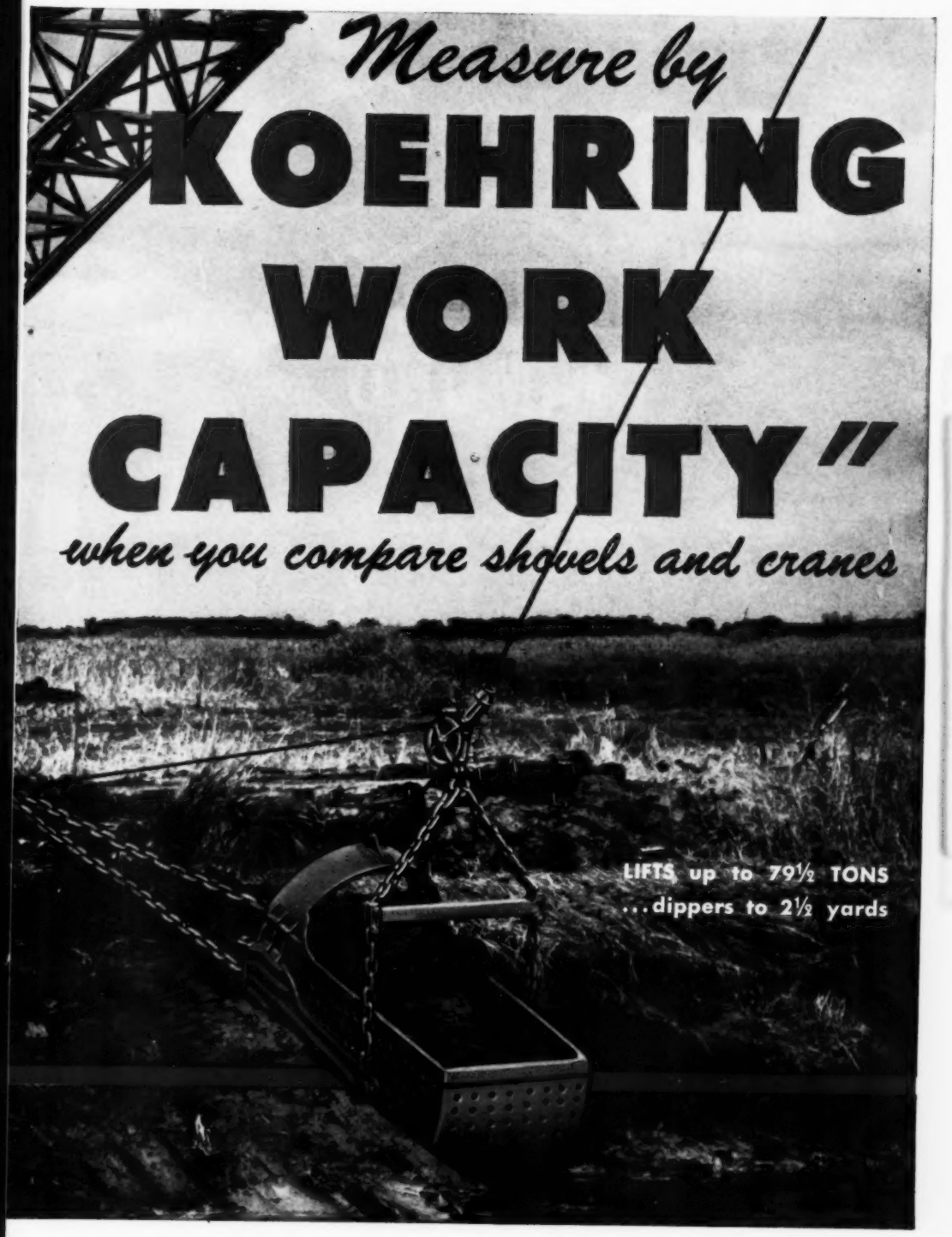
Basic Refractory Brick and Ramming Materials • Dolomite • Magnesia • Magnesite • Alumina • Periclase

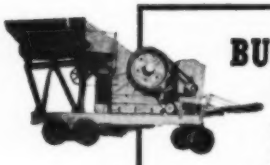
To insure lowest cost per yard moved, or ton lifted . . . compare all excavator and crane information with "KOEHRING WORK CAPACITY". Your Koehring distributor has specific figures that will let you prove for yourself the biggest profit-earning value. K124

KOEHRING HEAVY DUTY

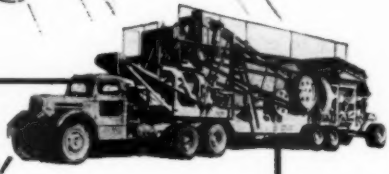
KOEHRING COMPANY
Milwaukee 16, Wis.

Subsidiaries: PARSONS • JOHNSON • KWIK-MIX


Measure by
KOEHRING
WORK
CAPACITY"
when you compare shovels and cranes
LIFTS up to 79½ TONS
...dippers to 2½ yards



BUILT...to keep you in business...*at a Profit!*



Diamond equipment shortens material flow, jumps output, gives you more for your money. Crushing, screening, washing and loading of rock, gravel, aglime and concrete aggregates are best done by Diamond. Before you specify or buy, see your Diamond Distributor. Or write for illustrated literature.

Big Savings!

IN...

- ✓ DOWN TIME
- ✓ MAINTENANCE MAN-HOURS
- ✓ REPLACEMENT PARTS COSTS..

On Grinding Mills Equipped with this ALLIS-CHALMERS DIAPHRAGM

1. EASY TO REMOVE PLATES — They pull straight out without disturbing shell liners! Filler bar is same height as adjacent shell liners.
2. THICKER GRATE RIBBING — Greater protection against wear . . . longer life and lower milling costs.
3. SPECIAL BOLT PROTECTION — Diaphragm bolts are heavily shielded against abrasive action of discharging material.
4. LONG LIFE — Made of abrasion-resisting alloy steel.
5. FLEXIBILITY — If ever desirable, you can conveniently change your mill operation from low level to intermediate or to full grate discharge by a simple replacement of plate halves. A-3624

Get more facts about this new, improved grinding mill diaphragm from the A-C representative in your area. Or write Allis-Chalmers, Milwaukee 1, Wis.

ALLIS-CHALMERS

A-C ALLIS CHALMERS

Sales Offices in Principal Cities in the U. S. A. Distributors Throughout the World.

Hammermills

Gyratory Crushers

Jaw Crushers

Grinding Mills

Vibrating Screens

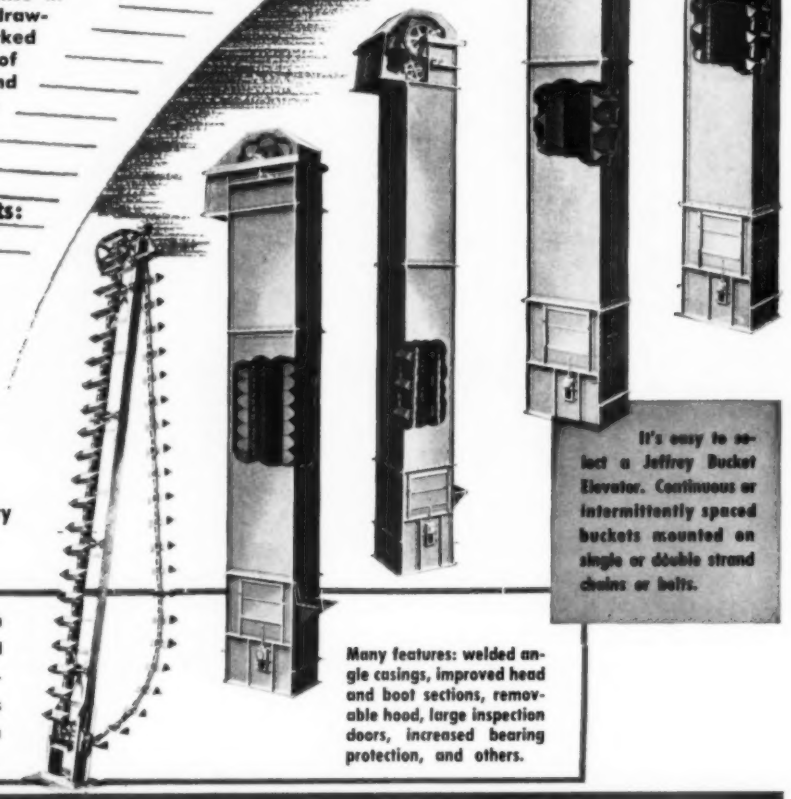
Kilns, Coolers, Dryers

on the "UP and UP"

Meaning you can DEPEND upon a Jeffrey Bucket Elevator if you have material to be lifted so that something else may be done with it. Step UP your production schedules . . bring costs down. In addition, you save time and expense in making layouts and drawings . . we have worked out a complete line of standards. A type and size to meet your requirements.

Other Jeffrey Products:

Bin Valves
Belt Idlers
Car Pullers
Chains
Conveyors
Coolers
Crushers
Dryers
Feeders
Pulverizers
Screens
Transmission Machinery
Weigh Feeders



It's easy to select a Jeffrey Bucket Elevator. Continuous or intermittently spaced buckets mounted on single or double strand chains or belts.

Vertical or inclined, with or without casings and many features for economical operation. It is a step forward to select a Jeffrey Bucket Elevator.

Many features: welded angle casings, improved head and boot sections, removable hood, large inspection doors, increased bearing protection, and others.

THE JEFFREY MANUFACTURING COMPANY
917 North Fourth St., Columbus 16, Ohio
ESTABLISHED 1877

Complete Line of Material Handling, Processing and Mining Equipment

"This is where we came in . . ."

The picture that's coming up on the "news reels" now is one that we all remember. Once again Uncle Sam is a big machinery customer with first call on output.

This doesn't mean that we can't take care of our old customers . . . but it may mean that we can't do it as promptly as you've learned to expect. You may have to wait a bit longer for that new shovel, dragline or crane. But it's in a worthy cause . . . and to compensate, may we suggest that you take a little extra care to make your present equipment last?

We're not suggesting that you *pamper* the machines. Lima equipment is designed and built to take a terrific beating, and you can keep right on demanding a full day's work from every unit. But almost every piece in service gets some *unnecessary* punishment, because proper maintenance is neglected. If you focus on proper care—which every good piece of machinery deserves—you'll keep the Lima's at their working peak considerably longer.

For further information
write to
BALDWIN-LIMA-HAMILTON CORPORATION
Lima-Hamilton Division
Lima, Ohio, U. S. A.

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OFFICES IN PRINCIPAL CITIES OF THE WORLD

BALDWIN-LIMA-HAMILTON

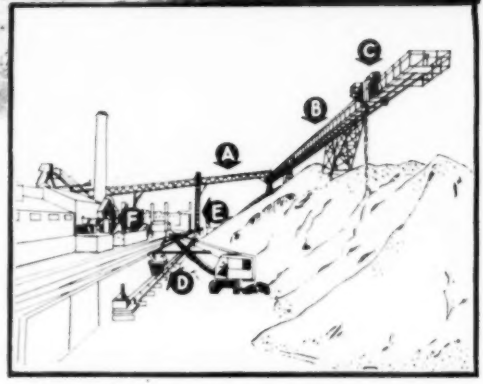
SHOVELS • CRANES • DRAGLINES • PULLSHOVELS • TRUCK CRANES

Another Example of Continental's Belt Conveyors at Work -

The Southern Cement Company's conveying and elevating system in their Birmingham Plant incorporates several advanced features of design—one of which is illustrated above and to the right.

Continental's engineers are skilled in "practical engineering" — the kind that results in installations designed for economical, dependable operation and long life. All Continental products — whether especially designed systems and equipment or standard equipment and accessories — show the value of practical engineering.

• *Call Continental engineers in on your job — or specify Continental on your next replacement order.*



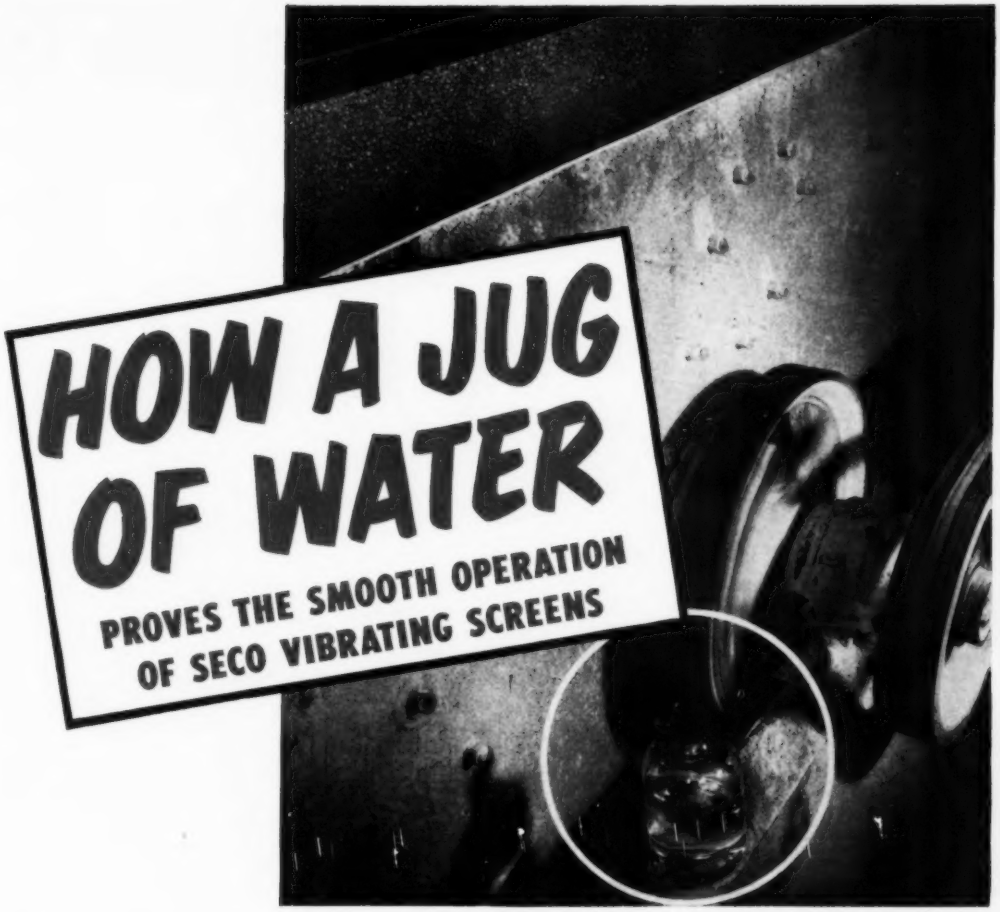
Slag is carried to storage by Conveyors A and B and discharged to storage at any point by self-propelled Tripper, C. As material is needed for processing, it is loaded by shovel onto Reclaim Conveyor D, raised by Bucket Elevator E, and discharged onto return side of Conveyor Belt A., which delivers it to Plant F.

Write for your copy of Continental's new Catalog ID 481, "Continental Belt Conveyors."

CO 4805

INDUSTRIAL DIVISION
CONTINENTAL GIN COMPANY
BIRMINGHAM, ALABAMA

ENGINEERS CGC ATLANTA • DALLAS • MEMPHIS • NEW YORK CGC MANUFACTURERS



No Vibration in the Base Frame At Top Speed With Full Load

The jug of water resting on the base frame of this Seco vibrating screen photographed on the job at Buffalo Crushed Stone Company is clearly undisturbed by the movement of the live screen body operating with full load at 1050 R. P. Ms.

Here is definite proof that Seco's patented equalizer assembly keeps the vibration in the live screen body, *where it belongs.* The fully controlled true circular action of the screen prevents bobbing, weaving and excessive blinding.

No wonder thousands of Seco vibrating screen owners report maximum tonnages of materials from ag-lime to rip-rap accurately screened. No wonder Seco vibrating screens stay on the job year after year with little or no maintenance.

Before you buy any screening equipment, get the whole Seco story. Send for Catalog No. 203 today!

SECO
TRUE CIRCULAR ACTION
VIBRATING SCREENS

THE COMPLETE LINE OF VIBRATING SCREENS

Because Seco makes vibrating screens exclusively, the sole interest of this company is to make the best vibrating screens you can buy. Yes, and there's a right Seco for every screening job from Ag-Lime to Rip-Rap because Seco makes over 300 models.

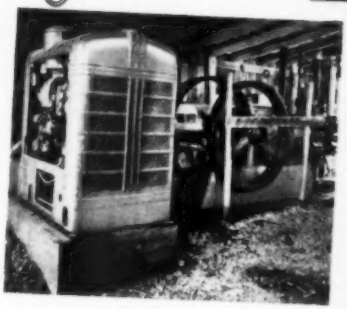
SCREEN EQUIPMENT CO., INC.
1750 Walden Avenue Buffalo 25, New York
In Canada: United Steel Corp. Toronto, Ontario

General Motors Diesel
Case History 5012-12

USER: United Feldspar Minerals Corp.
Spruce Pine, N. C.

INSTALLATION: 5-year-old GM 4-71 Diesel (used previously on sawmill) replaces steam engine on Ingersoll-Rand FR-1 compressor.

PERFORMANCE: Does as much work as 2 portable compressors with 4-cylinder gasoline engines and supplies more air. Maintains 100 lb. pressure for drilling. Cuts fuel costs 50%.



THIS DIESEL
does the work of two engines

Cuts fuel costs 50%—Supplies more air

Here's another typical case of how General Motors Diesels take over any job—stick to it month after month—and do it better than either gasoline or steam. After four years on a sawmill—and with one minor overhaul—this 4-71 is now outperforming two 4-cylinder gasoline engines and cutting fuel costs in half. Whatever your need for power—in air compressors, trucks, tractors, cranes or crushers—why not learn firsthand how much more profitably and dependably the GM 2-cycle Diesel can deliver it? There's a GM Diesel distributor in your vicinity who'll gladly give you all the facts.

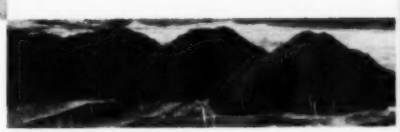
DETROIT DIESEL ENGINE DIVISION
GENERAL MOTORS, DETROIT 28, MICHIGAN

It pays to Standardize on

GM
GENERAL MOTORS
DIESEL POWER

LOOK WHO'S GETTING EXTRA "BLACK TOP PAVING" PROFITS...

THE AGGREGATE PRODUCERS!



This is BIG NEWS... aggregate producers have found a way to make more profits from the multi-million dollar paving market. With just a minimum investment, rock producers are gaining sizeable profits by adding an AMALGA-PAVE cold mix asphalt paving material plant to their regular operation.

It's a natural tie-in for your crushed stone operation... many of the basic facilities for producing this fine quality cold-mix, cold-lay asphalt paving material are a part of your present operation. You can assure maximum efficiency from your operating crew, equipment and sales force, because AMALGA-PAVE can be stockpiled far in advance of actual needs. It will not harden until rolled and subjected to traffic. You can make the most of slack time, your salesmen can sell ahead, and you gain an outlet for low value and surplus aggregates as they can be used in the mixing of AMALGA-PAVE.

Your investment is comparatively small because the mixing plant is simplicity itself... no expensive rotary drier, steam boiler, dust collecting system, screens, etc., are needed. The plant actually consists of a conventional weigh box and mixing unit, an asphalt pulverizer and flux oil injection equipment. It is always ready for operation without warm-up periods, etc., and it takes but two men to operate the plant at full capacity. The initial cost is less than ½ the cost of a "hot-mix" plant. George Jacoby of Helena Sand & Gravel Co., Montana, operates his highly profitable AMALGA-PAVE plant in conjunction with his aggregate business. This is typical of how progressive aggregate producers are widening their operations to gain a sizeable chunk of the billion dollar a year paving market. A ready market exists for paving materials... roads, streets, school yards, parking lots, airports, etc. Learn more about an AMALGA-PAVE franchise opportunity... FREE ILLUSTRATED LITERATURE is available on request. Just fill in the coupon below and mail today!

Amalga-Pave

NATIONAL AMALGA-PAVE, INC.
357 S. ROBERTSON BOULEVARD, BEVERLY HILLS, CALIFORNIA

NATIONAL AMALGA-PAVE, INC.
357 S. Robertson Blvd., Beverly Hills, Calif.

Gentlemen:

Please send illustrated brochure telling how I can make money with AMALGA-PAVE.

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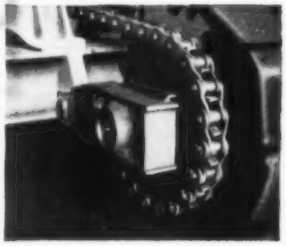
CITY_____ STATE_____

Teaming up for bigger profit possibilities

CHECK THESE FEATURES

- √ Completely Convertible
- √ Long, Wide Crawlers
- √ Alloy Cast Bases
- √ Tandem Drums
- √ Power Booster Clutches
- √ High Line Speeds
- √ Wide-Vision Cab
- √ Power Dipper Trip
- √ Pin-Connected Boom



Crawler outboard bearing assembly

It isn't unusual to find two or more BAY CITY machines teaming up for bigger profit possibilities because so many BAY CITY owners have been *repeat buyers* for up to 35 years. And, it isn't unusual to find scores of BAY CITY shovels, cranes and draglines with records of 20 to 25 years of service. No single factor makes them so long-wearing . . . so long lasting. It is a combination of heavy-duty design and construction features that contribute to this extremely long life and satisfactory service.

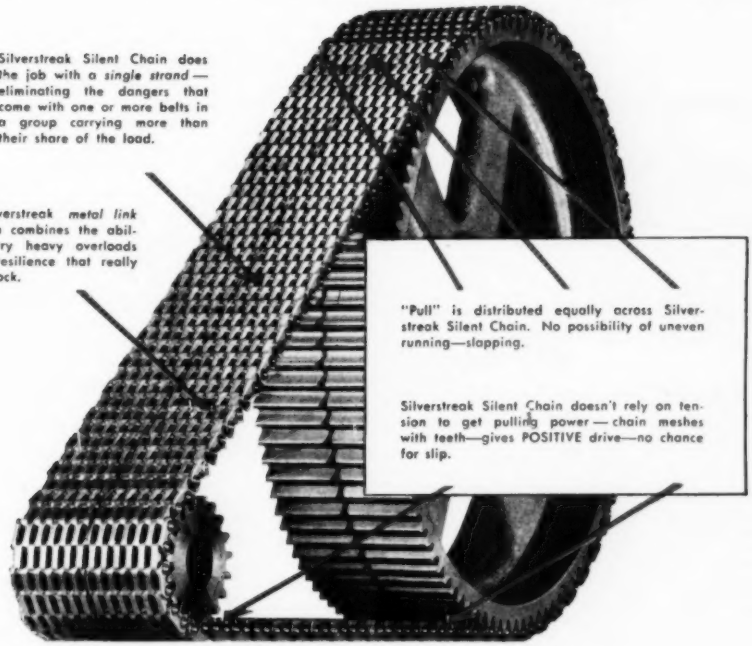
The BAY CITY Balanced Design plus the many operating and maintenance advantages have been engineered with bigger value and dependable performance. We would like you to know the full story. Why not see your nearest BAY CITY dealer or write today for catalog. BAY CITY SHOVELS, INC., BAY CITY, MICHIGAN

204

BAY CITY

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

How to get Slip-proof Slap-proof Shock-proof power transmission at high speeds


Silverstreak Silent Chain does the job with a *single strand* — eliminating the dangers that come with one or more belts in a group carrying more than their share of the load.
Husky Silverstreak *metal link* construction combines the ability to carry heavy overloads with the resilience that really absorbs shock.
"Pull" is distributed equally across Silverstreak Silent Chain. No possibility of uneven running—slapping.
Silverstreak Silent Chain doesn't rely on tension to get pulling power — chain meshes with teeth—gives POSITIVE drive—no chance for slip.

Drive your machines the proven way — with LINK-BELT Silverstreak Silent Chain

Yes, get the amazing, trouble-free efficiency of 98.2%. A standard of operation that continues throughout the long, long life of the drive. More than this — every rating and design is backed by a record of *proven performance*. And every chain is engineered for the job. You conserve space, too—for Link-Belt Silverstreak Silent Chain Drives operate efficiently on short centers. Ratios as high as 10 to 1 are commonly used.

Little wonder, then, that so many concerns to whom top operation efficiency and rugged dependability are a must, standardize with Link-Belt Silverstreak Silent Chain Drives.

LINK-BELT COMPANY: Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices, Factory Branch Stores and Distributors in Principal Cities.

12,881

LINK-BELT

SILVERSTREAK SILENT CHAIN DRIVES

Have you a dust recovery problem?

Bring it to
WESTERN PRECIPITATION

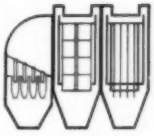
. . . The Only Organization With Years Of "Know-How" In BOTH *Electrical* And *Mechanical* Recovery Methods!

If you have any kind of a suspension-recovery problem—whether dust, fly ash, fume, fog or mists—it will pay you to bring it to the leading organization in the field . . . WESTERN PRECIPITATION CORPORATION. Western Precipitation not only pioneered, over 44 years ago, the first commercial application of the now-famous COTTRELL Electrical Precipitators, but also has been a leader for many years in the *mechanical* recovery field with its widely-accepted MULTICLONE Collectors.

Result:

Western Precipitation is unsurpassed in the all-important factor of "know-how" in BOTH the electrical and mechanical fields . . . knows from years of first-hand experience whether your particular problem can best be solved by mechanical or electrical methods—*or by a combination of the two* . . . can give you a direct and unbiased recommendation on the matter . . . and then can provide the complete installation under *one* responsibility, *one* overall performance guarantee, even where Combination Multiclone-Precipitator (CMP) installations are made!

Western Precipitation products and services include . . .



COTTRELL
Electrical Precipitators

. . . the most efficient recovery equipment for high recovery, long life, low maintenance on practically any type of suspensions, wet or dry. COTTRELLS can be designed to handle a few c.f.m. —or millions—with equal ease, and at virtually any operating temperature. Recovery efficiencies closely approach 100% recovery, if desired, with very low draft loss, minimum power costs and negligible labor costs. *By all standards, Western Precipitation* COTTRELLS *give highest recovery at lowest cost per-year-of-service!*

MULTICLONE
Mechanical Collectors

. . . the most efficient, most compact, most trouble-free mechanical equipment for recovering suspensions from gases. Because of their unique small-tube design, MULTICLONES are unsurpassed in mechanical recovery efficiencies—require less space, less maintenance, and are far simpler to install. No filters or screens to replace, nothing to burn or cause fire hazards, no high speed moving parts to repair or replace. These and many other advantages make MULTICLONE Collectors the logical choice on installations where mechanical recovery is selected.

CMP UNITS
(Combination Multiclone-Precipitator)

. . . combine, in *one* compact installation, *both* mechanical and electrical recovery principles so that maximum benefit is obtained from the advantages inherent in each method. The MULTICLONE section centrifugally removes the larger and heavier suspensions (down to a few microns in diameter) . . . and the COTTRELL section then electrically removes the very small particles remaining in the gases. Thus, the bulk of the recovery is obtained with relatively low-cost equipment, and the final clean-up is obtained with equipment having unusually high recovery efficiency—approaching theoretically perfect, if desired.

The recovery of suspensions from gases is a highly exact science and every problem is different. Some require mechanical methods—others electrical methods—still others a combination of mechanical and electrical methods in proper balance to meet the individual requirements of each application. No matter what your problem, remember that only Western Precipitation has had years of field experience in BOTH mechanical and electrical methods!

Send for descriptive literature!

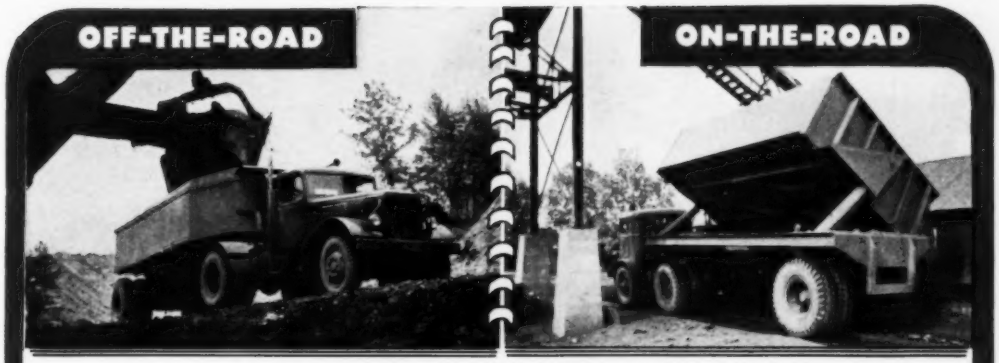
Let our experienced engineers study your recovery requirements and make an unbiased recommendation on the equipment best suited to your particular problem. A wire, phone call or letter to our nearest office places this unique "know-how" at your service, without obligation.

WESTERN Precipitation CORPORATION

ENGINEERS, DESIGNERS & MANUFACTURERS OF EQUIPMENT FOR COLLECTION OF SUSPENDED MATERIALS FROM GASES & LIQUIDS

Main Offices: 1015 WEST NINTH STREET, LOS ANGELES 15, CALIFORNIA
CHRYSLER BLDG., NEW YORK 17 • 1 N. La SALLE ST. BLDG., CHICAGO 2
1429 PEACHTREE ST. N.E., ATLANTA • HOBART BLDG., SAN FRANCISCO 4
PRECIPITATION CO. OF CANADA, LTD., DOMINION SQ. BLDG., MONTREAL

MULTICLONE—T.M. Reg.



GENERALS

go in—get the load—carry it out and over-the-highway

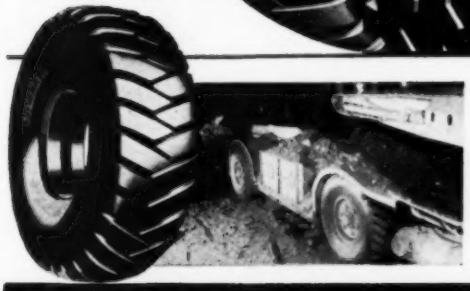
FASTER! EASIER! At Lower Cost!

Pile on the tons. The General L. C. M. is built to move heavy loads out over jagged surfaces without cuts, bruises or snags.

Move more tons over the road on this tough, dependable General H.C.T. Longer wearing, safer running, quicker stopping.

THE GENERAL L.C.M.

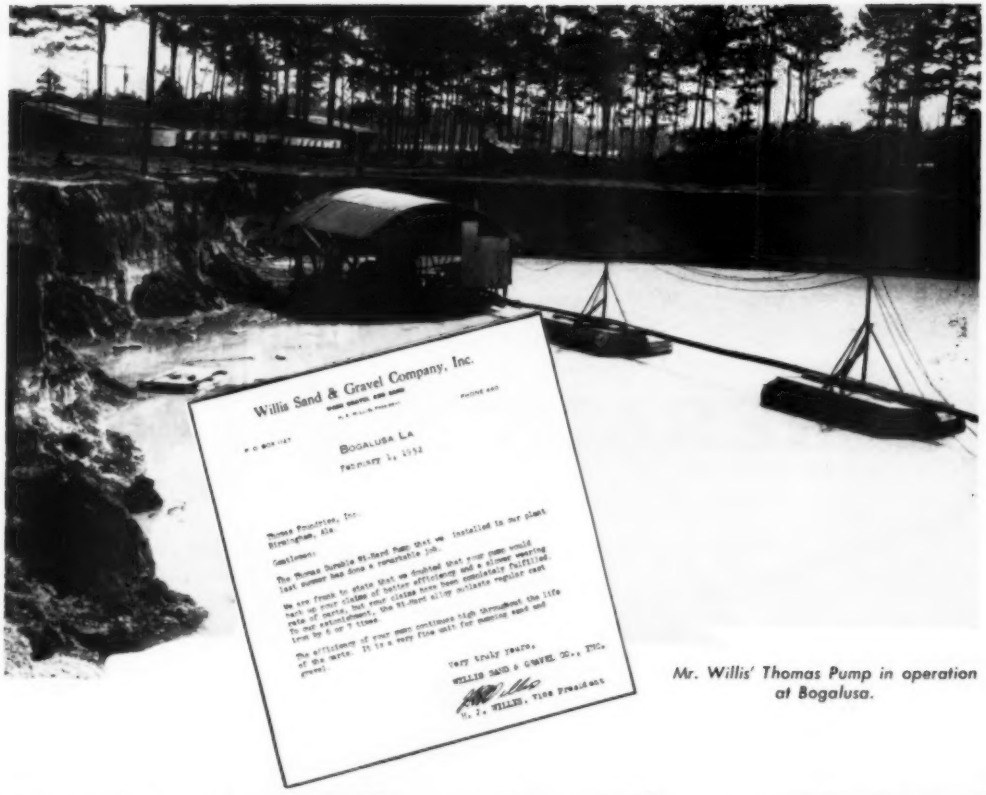
THE GENERAL H.C.T.



GENERAL UNDERGROUND MINING TIRE

Extra thick side-walls and shoulders resist snags, cuts and bruises. Definitely gives more hours of uninterrupted work.

SPECIFY GENERAL TIRES ON YOUR NEW EQUIPMENT


Willis Sand & Gravel Company, Inc.
BOGALUSA LA
FEBRUARY 1, 1952
Thomas Foundries, Inc.
Birmingham, Ala.
Gentlemen:
The Thomas Durable Hi-Hard Pump that we installed in our plant last summer has done a remarkable job.
We are proud to state that we doubted that your pump would back up your claims of better efficiency and a slower wearing rate of parts, but your claims have been completely fulfilled. To our astonishment, the Hi-Hard alloy outlasts regular cast iron by 6 or 7 times!
The efficiency of your pump continues high throughout the life of the parts. It is a very fine unit for moving sand and gravel.
Very truly yours,
WILLIS SAND & GRAVEL CO., INC.
W. J. WILLIS, Vice President

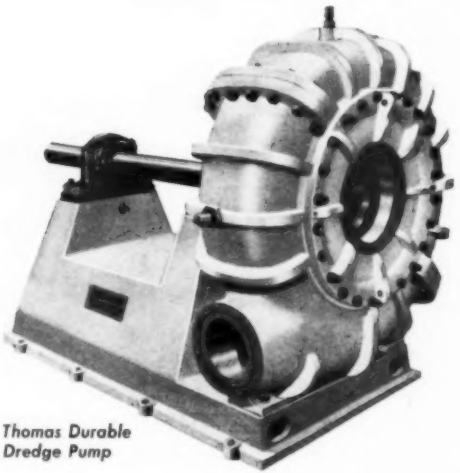
Mr. Willis' Thomas Pump in operation at Bogalusa.

Read Letter Telling How Thomas Ni-Hard Durable Pump Does a "Remarkable Job"

Users of Thomas Pumps one after another come forward to testify. Their experience with this new, different and improved solids handling pump is a subject they like to talk about.

Mr. Willis' is the 5th letter we have printed in this series. Others will follow. Like the others, Mr. Willis says his Thomas Durable Pump is more efficient and lasts 6 to 7 times longer than ordinary cast iron pumps!

Thomas Durable Pumps are especially designed to be made of Hi-Hard alloy iron — a metal highly resistant to abrasion. If you handle sand, gravel or other coarse solids, it will pay you to investigate what Mr. Willis says. Write us for free illustrated folder and copy of testimonial letters from users of Thomas Pumps. Address THOMAS FOUNDRIES, Inc., Birmingham, Alabama.



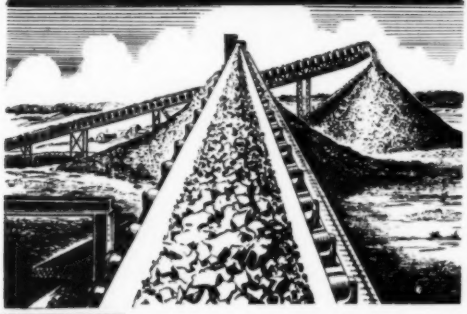
Thomas Durable Dredge Pump

This new

CONVEYOR B

gives you eve you want . . .

R CONVEYOR BELT

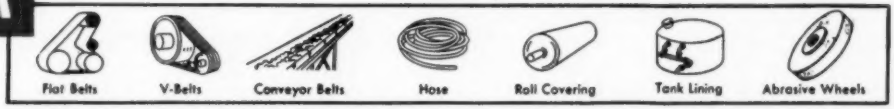


Users asked for a conveyor belt to stand up where there is exceptional tendency to tearing or puncturing . . . where pulleys are relatively small . . . and yet where only a thick, narrow belt could be used. It must hold fasteners better too. R/M engineers solved this combination of tough problems with Ray-Man "F", the new conveyor belt using unique properties of synthetic fibre strength members • Ray-Man "F" also gives you everything you ask for in a general purpose belt — troughability, flexibility, resilience for shock loading, better cover adhesion. It naturally follows that you get longer service than you ever thought possible in a conveyor belt • Bulletin 6915 describes it fully. Write for your copy . . . The R/M representative can show you equally good engineering in R/M hose, transmission and V-belts.

RM

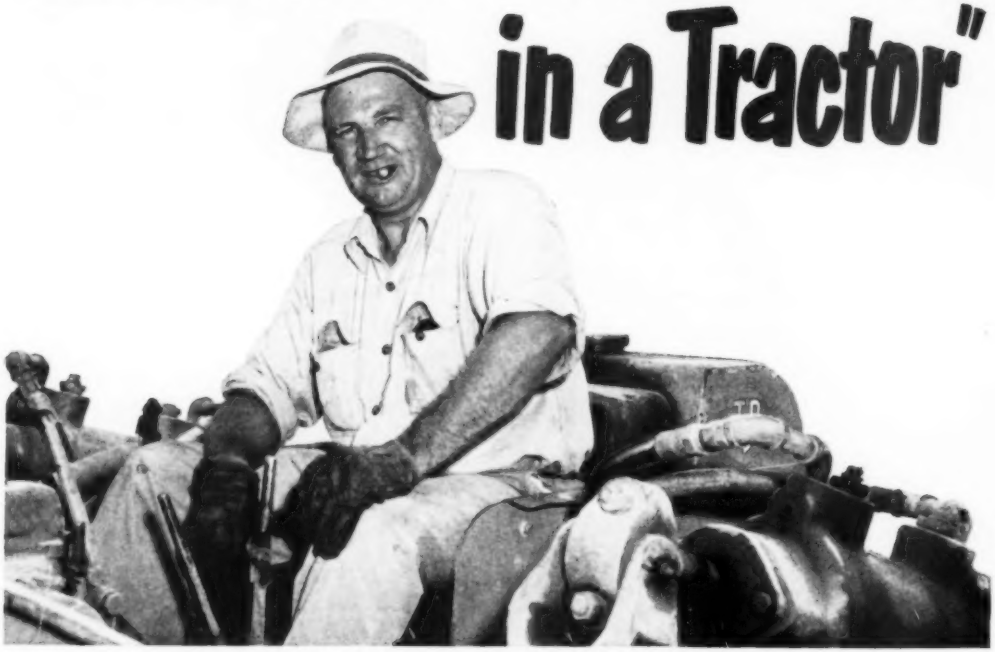
MANHATTAN RUBBER DIVISION — PASSAIC, NEW JERSEY

RAYBESTOS - MANHATTAN, INC.



Other R/M products include: Industrial Rubber • Fan Belts • Radiator Hose • Packings • Brake Linings • Brake Blocks Clutch Facings • Asbestos Textiles • Sintered Metal Parts • Bowling Balls

"That's What a Man Likes in a Tractor"



Hard-working International TD-9 scores big in Indiana quarry

The Corydon Stone Company at Lanesville, Indiana, has numerous hurry-up calls for its trouble-shooting TD-9. Dozing crushed stone, pushing chips up on a 40-foot stock pile and cleaning around the crusher are only a few of the tasks it does better and faster.

Operator Steve Bachman says:

"I've operated crawler tractors going on thirty-one years, and I like Internationals better than all the others. The TD-9 really goes to the job in a hurry and gets the job done. That's what a man likes in a tractor!"

Make a date with your local International Industrial Distributor. He'll give you brass-tacks proof of how International power gets out the work. He'll show you fully-equipped repair shops, factory-trained men and full stocks of spare parts. You'll know that his customers are assured of long, profitable service from every piece of equipment he sells.

INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILL.

PILING UP THE CHIPS. International TD-9 gets all kinds of tidying-up and stock piling jobs done in a hurry, and proves itself a useful quarry hand.

INTERNATIONAL HARVESTER

INTERNATIONAL

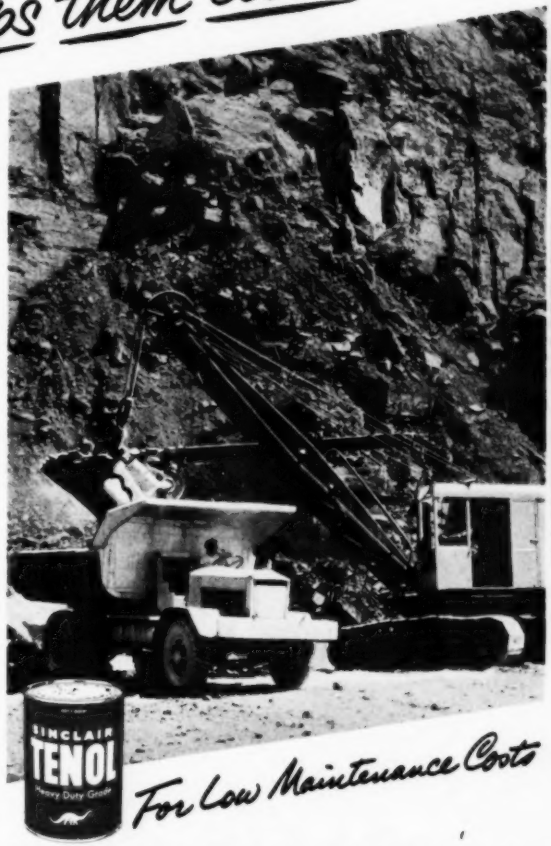
POWER THAT PAYS

LONGER ENGINE LIFE because this lubricating oil also CLEANS ENGINES —and keeps them clean!

For over 15 years . . . in all types of diesel and gasoline engines in rugged, heavy-duty service . . . Sinclair TENOL® has been doing an outstanding job. TENOL has *proven* it provides long periods of trouble-free operation at sustained high power output, with lowered upkeep costs.

Sinclair TENOL is not to be compared with many alleged "heavy-duty" oils. TENOL is the real thing! You can easily tell if an oil is actually "heavy-duty" . . . See if it is approved under new Military Specification MIL-O-2104. TENOL far surpasses this stringent Government standard!

Save your valuable equipment — phone your nearest Sinclair Representative or write direct to Sinclair Refining Company, 600 Fifth Ave., New York 20, N. Y.



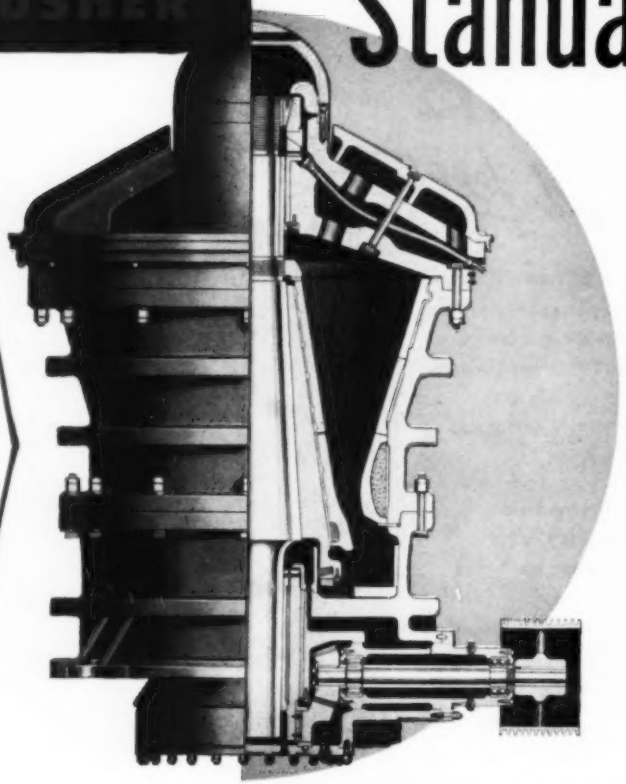
SINCLAIR TENOL prolongs engine life

For Low Maintenance Costs

- No more lacquering of pistons, cylinders, valves.
- TENOL keeps valves and rings from sticking.
- TENOL prevents clogging of oil pump screens and oil channels.
- With TENOL, engines stay clean — free from harmful sludge and carbon.
- TENOL does not thin out at high temperatures, flows freely at low temperatures.
- Low oil consumption with full power, with TENOL.
- TENOL prevents corrosive wear of bearings and other parts.
- TENOL eliminates foaming.

Setting New Crusher Standards

SUPERIOR
Primary & Secondary
CRUSHER



Improved lubrication throughout, including spider.

Sturdy all-steel construction . . . with heavy external ribbing.

Greater operating flexibility than any comparable crusher. Eccentric setting and speed can be varied to suit your capacity requirements.

More effective dust seal.

Vertical adjustment compensates for wear and maintains uniformity of product by means of adjustable spider suspension or *Hydroset* control. This hydraulic control permits quick product size setting and makes it easy to clear crushing chamber after shutdown.

Easy-to-replace, long life bearings.

Free-fall discharge.

THE *SUPERIOR* CRUSHER — with all these important features — requires fewer manhours to maintain . . . results in less shutdown time . . . less in the way of maintenance. And, whether on primary or secondary crushing, it will produce these savings for years to come. The A-C representative in your area will give you complete, detailed information. Call him, or write: Allis-Chalmers, Milwaukee 1, Wisconsin. A-3648

Superior and *Hydroset* are Allis-Chalmers trademarks.

ALLIS-CHALMERS

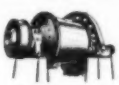
A-C ALLIS-CHALMERS

Sales Offices in Principal Cities in the U. S. A. Distributors Throughout the World.

Hammermills

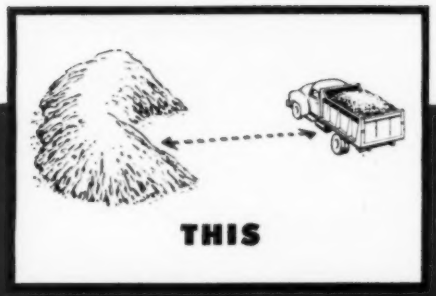
Jaw Crushers

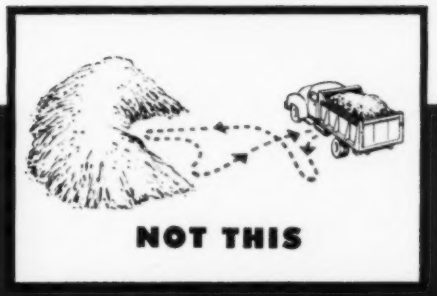
Gyratory Crushers


Grinding Mills

Vibrating Screens

Kilns, Coolers, Dryers





...is the PROFIT WAY!

You cut out costly loading "detours"... save time and effort . . . with an Oliver Industrial Wheel Tractor and Strait-Line Loader. This revolutionary hydraulic, double end tractor-loader can load either in front or rear . . . dump in front. The operator can load and dump without twisting or turning the tractor . . . travel a *straight line* between pile and truck.

Rear-end digging gives you far more loads with far less effort. "Push-Tilt" bucket with penetrating lips gives you a bigger load every time. With bucket carried in the rear, *and low,* additional traction is created, assuring far greater mobility and maneuverability in any kind of going. Rear-carried bucket puts increased load on rear wheels for increased traction . . . lightens load on front wheels for far easier steering.

Investigate the Oliver—Strait-Line for your operations. Your Oliver Industrial Distributor will give you the complete details. Or, write The Oliver Corporation, Industrial Division, 19300 Euclid Avenue, Cleveland 17, Ohio.

THE OLIVER CORPORATION

A complete line of industrial wheel and crawler tractors

ANSWER:

CONSULT THE MAKER OF ALL TYPES

for an unbiased recommendation

PHILLIE GEAR®

When you get a recommendation from Philadelphia for the application of a speed reducer to fit your drive you can be sure it is the *best* type unit you can get for that need. We make *all types and sizes* so our recommendations are not biased through a limited selection but are absolutely impartial.

Thousands of Philadelphia Speed Reducers are transmitting power dependably and economically in all lines of industry and in all parts of the world. As a result, we have gained a thorough understanding of industry's varied drive requirements. That experience has been applied to the design and construction of all our speed reducers and is a fundamental reason for the continuing preference for Philadelphia products.

OUR 60TH ANNIVERSARY

Whatever your power transmission problem it will pay you to talk it over with Philadelphia.

Catalogs are available on each type Philadelphia Speed Reducer, GearMotor and MotoReduceR. Write on your business letterhead and ask for the one you need.

Shown counterclockwise above—Herringbone, Planetary, Spiral Bevel, Worm Gear Reducers, Speed Increaser, GearMotor, Vertical MotoReduceR, Steeple Type Worm Reducer.

Philadelphia Gear Works, INC.

ERIE AVE. AND G ST., PHILADELPHIA 34, PA.

NEW YORK • PITTSBURGH • CHICAGO • HOUSTON • LYNCHBURG, VA.

IN CANADA: WILLIAM AND J. G. GREEY LIMITED, TORONTO

Industrial Gears and Speed Reducers
LimiTorque Valve Controls

NO WARPING, LESS DOWNTIME

with Segmental Kiln Ends Cast in Thermalloy

These segmental kiln ends designed by Electro-Alloys will lengthen kiln life, reduce downtime, and greatly speed replacement. Records show kiln ends lasting as long as 15 years, thanks to the protection against warping provided by these heavy-duty Thermalloy ends.

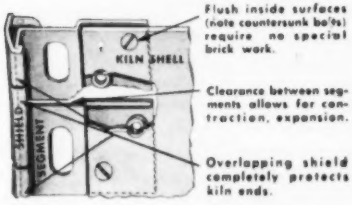
INSTALLATION IS EASIER because there's no special brick work needed. Segments are fastened with bolts countersunk on the inside of the kiln, eliminating any need for special brick work and providing a perfectly flush surface for the brick lining.

WARPING IS GREATLY REDUCED because, (1) segmental design allows for expansion and contraction without permanent set of the kiln shell, and (2) segments completely shield kiln ends from clinker and flame leakage to a depth of 16½" back from the mouth of the kiln. Yet you don't shorten the effective operating length of the kiln.

ONE-MAN REPLACEMENT is made possible with segmental design; the maximum weight to be handled at any one time is 35 lbs. Shield segments—which bear the brunt of flame leakage and clinker abrasion—can be removed by simply knocking out the pins which secure them, and replacing with new shield.

LENGTHEN SERVICE LIFE OF YOUR KILN next time you're replacing or installing a kiln end—let one of our engineers show you how we can lengthen its life for you. Simply write Electro-Alloys Division, 2032 Taylor St., Elyria, Ohio.

VIEW FROM INSIDE KILN


KILN SHELL
SHIELD SEGMENT
Flush inside surfaces (note countersunk bolts) require no special brick work.
Clearance between segments allows for contraction, expansion.
Overlapping shield completely protects kiln ends.

Kiln is protected by high heat resistant Thermalloy, to distance of 16½" back from mouth.

Shield casting protects kiln end from abrasion by clinker. Easily replaced by knocking out pins.

*T. M. Reg. U. S. Pat. Off.

AMERICAN Brake Shoe COMPANY

ELECTRO-ALLOYS DIVISION
ELYRIA, OHIO

DU PONT ANNOUNCES

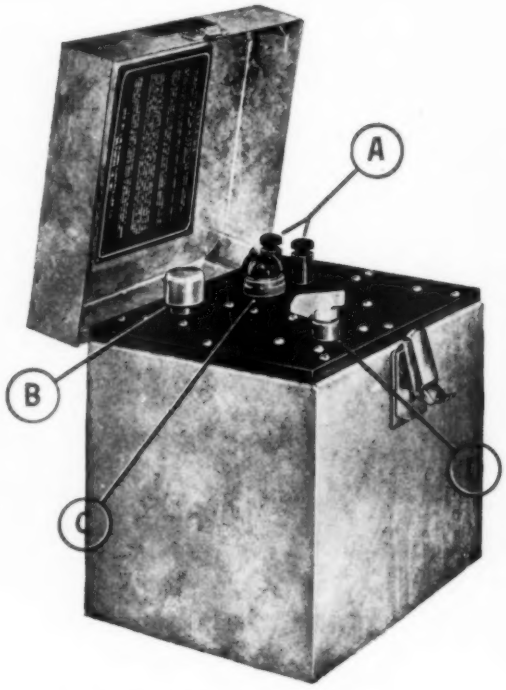
an entirely new type

blasting machine

GREATER CAPACITY

GREATER DEPENDABILITY

GREATER SAFETY



This latest product of Du Pont Explosives Research is a newly designed, portable, condenser discharge type blasting machine. In two models: CD-45 and CD-30.

Both machines have exceptionally high capacity. The larger (CD-45) is the most powerful built to date. Both machines easily fire small tunnel rounds in straight parallel . . . sizable rounds in straight series . . . and a surprisingly large number of caps in parallel series.

These new machines have been thoroughly tested in various kinds of operations throughout the country and have been found suitable for every conceivable type of blasting job, either on the surface or underground. The number of caps fired is not dependent on the physical effort applied by the operator, and the machines contain no moving parts.

Several built-in safety features provide maximum protection at all times. A group of long-lasting, radio-type B batteries are used to charge a number of condensers. At the moment of firing, these condensers deliver a powerful, instantaneous surge of power to the blasting circuit. The terminals are dead at all times except at the instant of firing and can never be made alive unless the operator has both hands on the controls and really means to fire the shot.

THEY'RE SIMPLE TO USE:

1. Connect wires to terminal posts "A" shown in photo above.
2. Depress charging switch "B" and hold until neon pilot light "C" shines brightly.
3. Still holding charging switch down . . . move firing switch "D" to "on" position. This action fires the charge. *Terminals are energized only at the moment of firing* . . . absolutely removing risk of a premature blast. It's as simple as that!

SPECIFICATIONS

The new Du Pont blasting machine is available in two compact models encased in rugged, waterproof, electroplated metal boxes:

MODELS	CAPACITY straight series			
	primary blast	secondary blast	straight parallel	parallel series
CD-30 (small) wt. 24½ lbs. length 9½ inches width 9½ inches height 10½ inches	50	125	25	480 (12 series of 40 each)
CD-45 (large) wt. 31 lbs. length 11 inches width 9½ inches height 11½ inches	50	200	50	1200 (30 series of 40 each)

ASK THE Du Pont Explosives representative in your area for complete information about this new, safer, more dependable, high-capacity blasting machine. E. I. du Pont de Nemours & Co. (Inc.), Explosives Department, Wilmington 98, Delaware.

DU PONT EXPLOSIVES

Blasting Supplies and Accessories

DU PONT

150th Anniversary

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

4000 volt, 3 phase, 60 cycle electric powered Quarrymaster in a trap rock quarry

The I-R QUARRYMASTER speeds blast-hole drilling in any kind of rock

High drilling speed, low bit cost, minimum labor requirements, low service truck charges—these are but a few QUARRYMASTER advantages that give you the lowest possible drilling cost per ton. Fast drilling speeds mean more holes per day permitting closer hole spacing for better fragmentation. The result is increased primary crusher efficiencies and reduced costs on loading and hauling equipment. Compare these features with any other drill rig.

• • •

Ask your nearest Ingersoll-Rand representative about this completely self-contained, self-propelled outfit that drills 6-inch holes, has continuous hole cleaning, automatic rotation and is available in either diesel or electric drive. Ingersoll-Rand Company, 11 Broadway, New York 4, N. Y.

- **DRILL ANY KIND OF ROCK**—from the softest limestones and dolomites to the hardest granites.
- **REAL DRILLING SPEED**—drills 25 to 60 feet per hour in limestone and 9 to 15 feet per hour in granite.
- **LOWEST BIT COST**—of any blast hole drilling method. Carset Bit life from 700 to 1600 feet in granite—up to 14000 feet in soft, less abrasive formations.
- **NEEDS NO BLACKSMITH SHOP**—Carset Bits are easily handled and sharpened on the job. No falling off of drilling speeds because of dull bits.
- **REQUIRES NO SPECIALIZED LABOR.**

712-5

Ingersoll-Rand

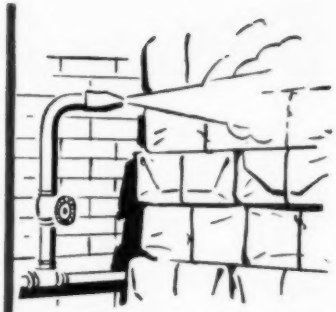
QUARRYMASTER

NO. 1
OF A SERIES
ON HOW TO

Stretch a MULTIWALL Paper Bag

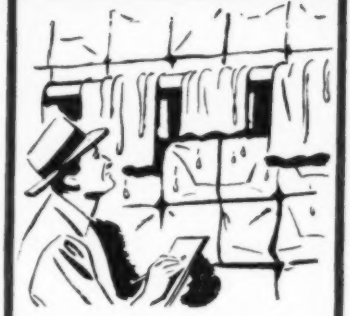
It is just good business to get the best possible use from your multiwalls. Here is one way to do it . . .

Keep Storage Rooms Humid:



1. Let steam escape in bag storage room to keep air and bags humid. Keep a humidity indicator in the storage room and check it frequently. Always leave aisles or spaces between stacks of bags to allow circulation.

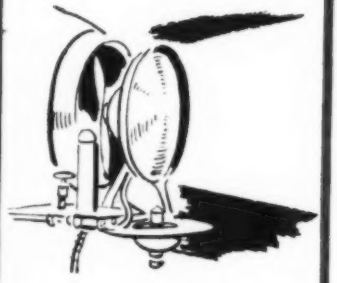
2. Store bags on dunnage, away from floor, and keep floor wet so moisture can be absorbed into air. A relative humidity of about 50% at warm temperature is best.



3. Drill small "needle" holes in horizontal water pipes. Hang cloths over holes. Air absorbs moisture from wet cloths.

4. Hang wet cloths over edge of water barrels. Cloth absorbs water and air absorbs moisture from cloth. Keep barrels well filled.

5. Open windows on damp or rainy day. Damp outside air will circulate in the bag storage room. Multiwalls are strongest when moisture content of the paper is about 6 or 7%.



6. Use commercial humidifying apparatus. Many types of commercial humidifiers are available with capacities to suit individual requirements.

Want the Whole Story?

Ask your Bemis Man for free, illustrated copy of Bemis Multiwall Packaging Guide. It deals with Storage, Filling and Closing, Handling, Palletizing and other important subjects.

• • •

If you need cotton or burlap bags also, Bemis is your best source.

Bemis

BEMIS BRO BAG COMPANY

St. Louis 2, Missouri

in WIRE ROPE, too specialized use calls for the RIGHT KIND of muscle

Tough, wiry muscles stand the Rocky Mountain Bighorn in good stead; give him the sure-footed agility he must have to survive on almost impassable heights.

In wire rope, too, the right kind of muscle is mighty important... because different uses present different problems of wear and tear. Bending fatigue. Abrasion. Shock stress. Load strain. Each requires wire rope with the right construction and lay; the right grade of steel and size of wire to best withstand the destructive forces encountered.

Complete quality control from ore to finished rope; long experience and specialized know-how—these are your assurance that in Wickwire Rope you always get the proper combination of physical properties for long-lasting, reliable service on your particular job.

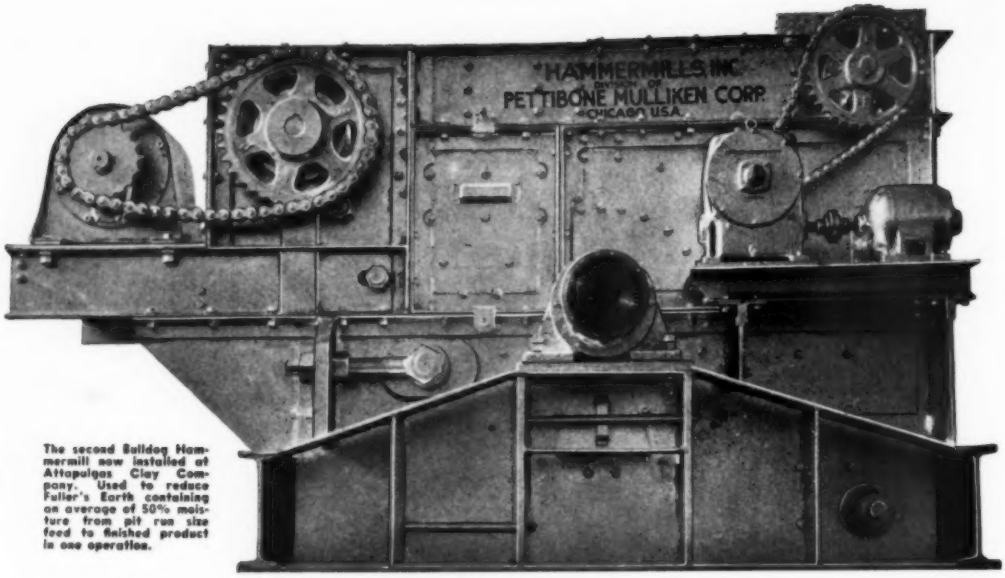
LOOK FOR
THE YELLOW TRIANGLE
ON THE REEL

THE COLORADO FUEL & IRON CORPORATION—Abilene (Tex.) • Denver • Houston • Odessa (Tex.) • Phoenix • Salt Lake City • Tulsa
THE CALIFORNIA WIRE CLOTH CORPORATION—Los Angeles • Oakland • Portland • San Francisco • Seattle • Spokane
WICKWIRE SPENCER STEEL DIVISION—Boston • Buffalo • Chattanooga • Chicago • Detroit • Emlenton (Pa.) • New York • Philadelphia

WICKWIRE ROPE

CF&I

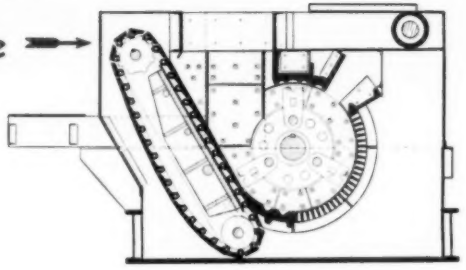
PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL & IRON CORPORATION



The second Bulldog Hammermill now installed at Attapulgus Clay Company. Used to reduce Fuller's Earth containing an average of 50% moisture from pit run size feed to finished product in one operation.

BULLDOG HAMMERMILL

with Moving Breaker Plate



For wet, sticky material reduction . . . for those tough, heavy-duty crushing jobs.

Illustrated above is the last word in Moving Breaker Plate Hammermill design. It is built by an engineering organization whose experience far surpasses any organization that might furnish Moving Breaker Plate crushing equipment.

Design Improvements have increased reduction efficiencies and lowered H.P. requirements. You can see this equipment in operation at any time. Also Hammermills will gladly survey your reduction requirements and recommend the proper equipment without cost or obligation. Just write or call.

Bulldog Hammermills are built in capacities up to 1000 tons per hour for every purpose: for primary, secondary, fine reduction of materials such as limestone, shale, Fuller's Earth, phosphate muck, phosphate mud balls, iron ore, oyster and clam shells, any reducible material.

HAMMERMILLS, INC. *division of* **PETTIBONE MULLIKEN CORP.**

4764 W. Division St. Chicago 51, Illinois Phone SPaulding 2-9300

A Statement by Anaconda on the Copper Situation

MANY users of copper have vital decisions to make . . . usually in connection with the present defense-induced shortages of copper and aluminum. This statement is an effort to remove the smoke screen surrounding the copper picture . . . to wipe away the confusion caused by too much talk supported by too few facts.

Substitution poses problems – Industry has been urged to substitute aluminum and other materials for copper. In some instances this may be logical and practicable. In many others it is difficult, if not impossible. But – before making *any* long-term decisions that may cost a great deal of money in engineering, new plant facilities or rescheduling of production operations – one should know the facts about the future of copper.

New Anaconda projects – The first major increase in copper production will come from Anaconda when the Greater Butte Project and the new Sulphide Plant at Chuquicamata, Chile, begin operations this spring. By 1953, these two projects should raise present levels of copper production by about 95,000 tons yearly.

Toward the close of 1953, Anaconda's new Yerington project in Nevada is expected to start producing at an annual rate of 30,000 tons. By then, Anaconda will be adding to the present yearly copper supply at the rate of about 125,000 tons.

Other new projects – During 1954-55 still other new projects in the U. S. and friendly foreign countries will further augment the increasing copper supply. All told, it is estimated that by 1955, not less than 450,000 tons of copper could be produced annually – over and above present production levels.

Accordingly, in 1955-56, domestic production plus imports could bring the U. S. copper supply to 1,800,000 tons yearly. This would represent an increase of about 20% over present levels. Based on historical comparisons, and barring a large-scale shooting war, this amount of copper could support a Federal Reserve Board Index of Industrial Production of 270, an increase of 24% over the present, and 45% above the first half of 1950.

• • •

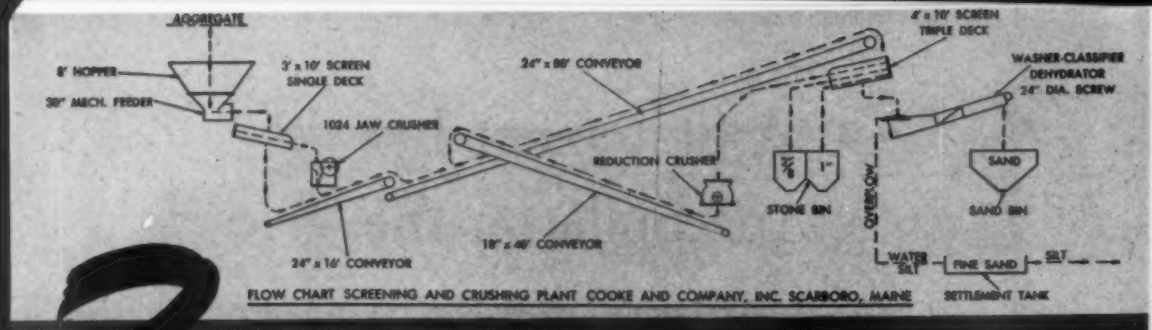
These are the 'things to come' in copper. On the basis of the facts there is no necessity for considering long-range substitution of other materials for the red metal.

52320A

ANACONDA
COPPER MINING COMPANY

The American Brass Company
Anaconda Wire & Cable Company
International Smelting and Refining Company
Andes Copper Mining Company
Chile Copper Company
Greene Cananea Copper Company

PRODUCERS OF: Copper, Zinc, Lead, Silver, Gold, Cadmium, Vanadium, Superphosphate, Manganese Ore, Ferromanganese.
MANUFACTURERS OF: Electrical Wires and Cables, Copper, Brass, Bronze and other Copper Alloys in such forms as Sheet, Plate, Tube, Pipe, Rod, Wire, Forgings, Stampings, Extrusions, Flexible Metal Hose and Tubing.



FLOW CHART SCREENING AND CRUSHING PLANT COOKE AND COMPANY, INC. SCARBORO, MAINE

3 Times the Production

at less than HALF the cost

Over-all view of plant from discharge end. Truck in foreground is receiving load of washed sand from sand bin.

Close-ups of primary crusher, screen and feeder.

At the left, three-deck screen over two-compartment stone bin. At the right, sand-classifier-washer-dehydrator over sand bin.

That's the experience of Cooke & Company with their new Austin-Western crushing and screening plant. Cooke & Company operate large gravel and sand pits in Scarboro, Maine; sell concrete mix, asphalt mix, washed gravel and washed sand. The separation of aggregate into stone of two sizes—"peastone" and "buckwheat"—and washed silt-free sand is the principal operation.

In the words of A. C. Stanley, president of the company—

"Compared with our previous operation, we save two trucks and four men — a total of $92.00 daily . . . are producing three times as much as before, at less than half the cost . . . quality of the gravel and sand produced has been very satisfactory . . . clean, carefully washed material is important when you want to obtain concrete that does not deteriorate."

Each Austin-Western plant is "tailor-made" for a particular production problem. Our engineering department will be glad to discuss yours.

AUSTIN-WESTERN COMPANY, AURORA, ILLINOIS, U. S. A.

Subsidiary of Baldwin-Lima-Hamilton Corporation

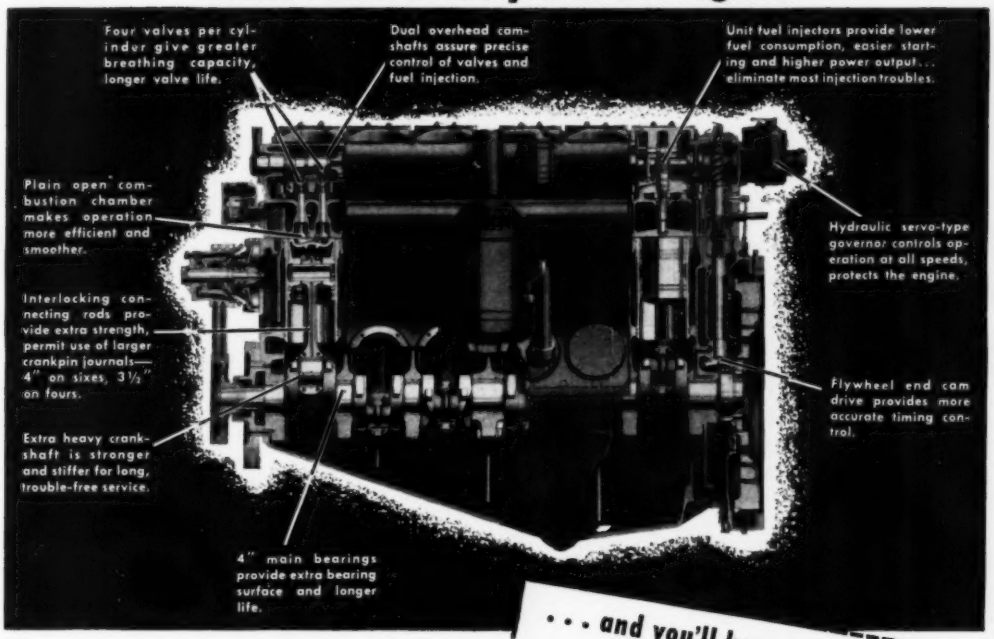
Feeding and discharge ends of double-screw, 24" washer-classifier-dehydrator, which has a capacity of 120 tons per hour.

BUILDERS OF CRUSHERS, SCREENS, WASHERS

Austin-Western

BALDWIN BLH LIMA-HAMILTON

Compare MURPHY DIESEL design with that of any other engine


Four valves per cylinder give greater breathing capacity, longer valve life.
Dual overhead camshafts assure precise control of valves and fuel injection.
Unit fuel injectors provide lower fuel consumption, easier starting and higher power output... eliminate most injection troubles.
Plain open combustion chamber makes operation more efficient and smoother.
Hydraulic servo-type governor controls operation at all speeds, protects the engine.
Interlocking connecting rods provide extra strength, permit use of larger crankpin journals—4" on sixes, 3½" on fours.
Flywheel end cam drive provides more accurate timing control.
Extra heavy crankshaft is stronger and stiffer for long, trouble-free service.
4" main bearings provide extra bearing surface and longer life.

... and you'll know why it gives you

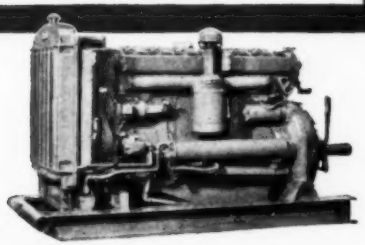
- **MORE POWER**
- **GREATER ECONOMY**
- **GREATER DEPENDABILITY**
- **LONGER LIFE**

MURPHY DIESEL

Heavy duty power

for rock crushing

Murphy Diesel Engines and Power Units for portable or stationary crushing plants, 90 to 226 H. P. 1200 and 1400 RPM. Generator Sets, 60 to 140 K.W.



ONLY with Murphy Diesel do you get all the advanced design features described above ... and only with Murphy Diesel do you get all extra power, economy, dependability and engine life that this design assures. Proved in thousands of hours of the toughest kind of service, this design has resulted from skilled engineering and long practical experience.

A more detailed discussion of these features and others is given in the booklet, *"10 Questions to Ask a Diesel Engine Salesman."* You can get a copy from your Murphy Diesel Dealer or we'll be happy to send you one.

MURPHY DIESEL COMPANY

5307 W. Burnham St. Milwaukee 14, Wis.

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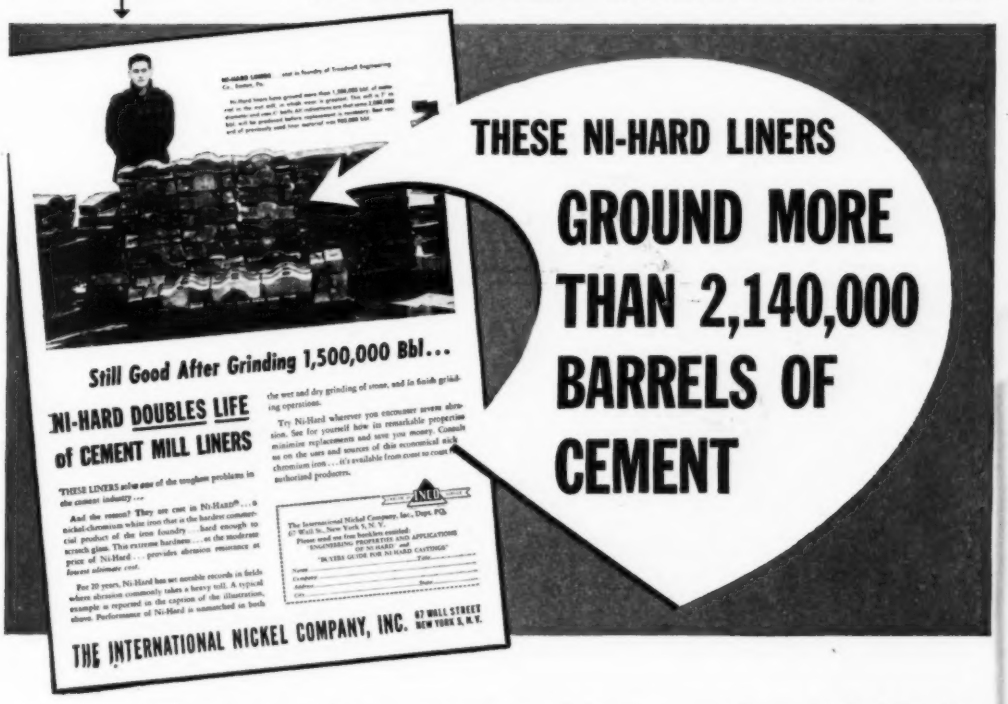
THIS RECORD APPEARED IN JULY 1950
...BUT PRESENT RECORDS SHOW THAT


THESE NI-HARD LINERS
GROUND MORE THAN 2,140,000 BARRELS OF CEMENT
Still Good After Grinding 1,500,000 Bbl...
NI-HARD DOUBLES LIFE of CEMENT MILL LINERS
THE INTERNATIONAL NICKEL COMPANY, INC.
67 WALL STREET NEW YORK 5, N.Y.

The best record of previously used liner material was 960,000 Bbl.

YES . . . 1,180,000 MORE BARRELS OF CEMENT were ground by these same Ni-Hard liners . . .

The Treadwell Engineering Company foundry in Easton, Pa., produced them for a leading cement company in the Lehigh Valley.

Ni-Hard® . . . an abrasion-resisting nickel iron . . . has proved the answer to hundreds of problems involving severe abrasive wear. During the past 20 years it has set notable records for length of service, down-time saving and *ultimate economy* where wear resistance is the primary requirement.

Investigate Ni-Hard wherever you encounter severe abrasion. See for yourself how its remarkable properties minimize replacements and save you money. Consult us on the uses and sources of this economical nickel-chromium iron.

At the present time, the bulk of the nickel produced is being diverted to defense. Through application to the appropriate authorities, nickel is obtainable for the production of Ni-Hard for many end uses in defense and defense supporting industries. There are authorized foundries, from coast to coast, equipped to produce Ni-Hard castings in all common forms and shapes.

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Please send me free booklets entitled:
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Company.....
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"LITTLE GIANT"... *the handiest unit around*

Write for details, with information about available distributorships.

for use as CRANE — DRAGLINE — PILE DRIVER — SHOVEL — CLAMSHELL — TRENCHOE — ELECTRIC MAGNET

YOU CAN'T BEAT this widely esteemed "workhorse" for versatility, output, endurance, and operating economy.

The "Little Giant" can be truck-mounted, crawler mounted, or rail propulsion mounted. Patented ball bearing turntable has no center pin or hook rollers, and is guaranteed for 10 years.

You have a job to do—and "Little Giant" can handle it better!

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Non-clogging air diffuser fabric, cotton or Fiberglas, in steel mesh framework.
Connection to air supply
Cadmium plated steel or stainless steel body

SIMPLE LOW-COST BIN-FLO AERATOR UNITS KEEP BULK MATERIALS MOVING

Finely ground dry materials in storage often lose air content and pack or bridge, thus losing capacity to flow.

BIN-FLO units diffuse low-pressure air through such materials, preventing packing and maintaining or restoring natural flow.

Easily installed in chutes, bins, hoppers, etc. Can be automatically controlled by BIN-DICATOR bin level indicators. Low first cost; low operating cost. Used in many industries. Fully guaranteed. Send for folder.

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the Sign of PLUS QUALITY for PLUS PERFORMANCE

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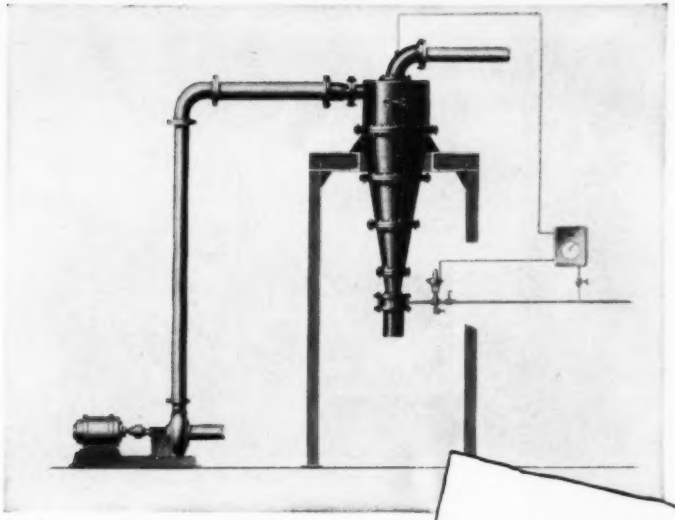

how good is a DorrClone* on desliming operations?

Results of independently run tests** on a 24" diameter DorrClone at a typical Florida phosphate rock washer show high recovery of wanted fraction—high elimination of slimes — remarkably constant discharge density.

PROBLEM

To deslime minus 14 mesh washer debris for maximum recovery of plus 200 mesh material prior to concentration.

EQUIPMENT TESTED

24" diameter DorrClone equipped with Dorrco Vactrol* feature for automatic density control.

TESTING PROCEDURE

Cumulative samples of DorrClone feed, overflow and underflow taken on a half-hourly basis over a five-day period.

Summary of Cumulative Results

Cum. Sample Number	Sampling Period in Hrs.	Feed % Solids	Underflow % Solids	Overflow % Solids	Underflow +200 Rec.	Overflow −200 Elim.	Feed T.P.H.
#1	7.0	14.1	70.2	6.5	97.14	89.27	32.8
#2	3.5	22.1	69.8	5.8	93.88	97.07	36.9
#3	6.0	13.3	67.2	4.4	97.23	88.07	25.5
#4	5.5	28.7	76.6	5.1	97.55	93.24	41.4
#5	6.5	14.2	72.8	5.5	96.83	90.64	33.8

*DorrClone and Vactrol are trademarks of The Dorr Company.

**Name and location upon request.

Regardless of material processed, the DorrClone can handle your desliming problem. Write to The Dorr Company, Engineers, Barry Place, Stamford, Conn., or in Canada to The Dorr Company, Engineers, 80 Richmond Street West, Toronto 1.

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HERE'S HOW IT WORKS:

POSITIVE —AUTOMATIC

YOU DON'T HAVE TO

KICK THE BUCKET

TO CLEAR IT—
IF IT'S A

PEKAY

M-T-MATIC

SELF-CLEANING ELEVATOR BUCKET

Your bankroll is taking as bad a beating as your buckets—if you have to kick, bang and batter every little while to get them clear. That ages buckets fast; and frequent replacements are expensive—so is downtime. Besides, carrying a dead plug round and round your elevator conveyor, jammed or frozen immovably into the bottom of your ordinary bucket, is no way to make production profitable!

With the patented PEKAY *M-T-MATIC*, each bucket *must* empty itself on every trip, *even if* SAND — GRAVEL — COAL — or other granular materials *are frozen or close packed*. The separately mounted stripper-plate — *an exclusive M-T-MATIC feature* — applies irresistible leverage to bucket contents, pushing up and out as it starts over head pulley.

Any way you look at it, you'll save with *M-T-MATICS*. You'll handle *more* material at same or faster belt speeds . . . cut belt replacement costs because there is much less strain on belts . . . reduce downtime and maintenance. THOUSANDS OF *M-T-MATICS* already in use are making money for users throughout the country. Available in all sizes — easy to install on any elevator conveyor. Try a couple at once and see for yourself!

QUICK DELIVERY!

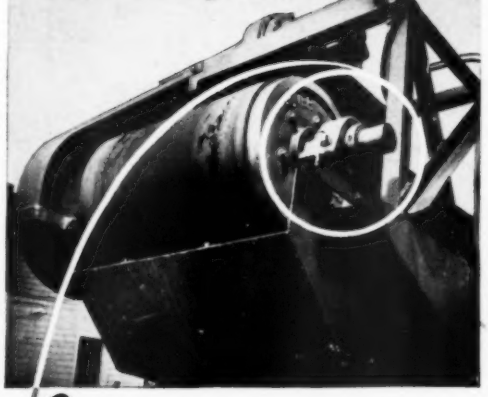
★ Send for prices today—
(give present bucket size)

Standard Buckets also available.

PEKAY MACHINE & ENGINEERING CO.

100 N. LA SALLE STREET CHICAGO 2, ILLINOIS

End of the line



for tramp metal

Permanent magnets inside pulley cause tramp metal to cling to belt as coal feeds by and drops off. After belt passes underside of magnetized pulley, tramp metal drops into separate bin.

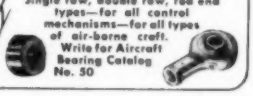
Metallic scrap in coal has long played serious havoc in furnace machinery—industrial or home. But, thanks to this new Homer Permanent Magnet Separator Pulley for coal conveyors, all harmful tramp metal can now be removed while loading for shipment.

Here, as in so much of industry's hard working equipment, you'll find Shafer ConCaVex Pillow Blocks on the job . . . minimizing friction, reducing power consumption, compensating for misalignments, providing reserve load and shock capacities and protection against the ravages of extreme weather, dust and dirt conditions that are part-and-parcel of coal processing operations.

Shafer ConCaVex bearing units (famous for a third of a century) are available in a full range of types and sizes that cover hundreds of industrial requirements—and probably yours. Write for Industrial Bearing Catalog No. 51.

Aircraft Bearings, Too!

Single row, double row, rod end types—for all control mechanisms—for all types of air-borne craft. Write for Aircraft Bearing Catalog No. 50



SHAFER CONCAVEX

SHAFER BEARING CORPORATION
801 BURLINGTON AVE.
DOWNERS GROVE, ILLINOIS

We Engineered the Mechanical Advantages Of Big Shovels into the Dempster-Diggster

The Dempster-Diggster's ability to dig hard and stratified materials without shooting is shown in photo at right. Note ample loading clearance. Dempster-Diggster, shown at work in Florence, Ala., is the Type GRD, Model 100.

This Dempster-Diggster, shown at work in Creighton, Pa., is also loading hard and stratified material without shooting. It is the Type CR, Model 100.

The Type GRD, Model 100-HL is shown above loading Hopper Bottom car, height of which is 10'8" from rail to top of car.

Simultaneous Independent Hydraulic Crowding and Hoisting, Variable Crowd Action at Any Dipper Position and Changeable Buckets are engineered into the Dempster-Diggster. Many of the present Dempster-Diggster owners were at one time in the same position you may be in today. They needed front end loaders, but they also needed shovels that could dig out 15 to 18 foot banks. The versatility of the Dempster-Diggster, plus its economical and efficient operation, left them with only one choice. In the first place, the Dempster-Diggster can do anything a conventional front end loader can do—and do it faster and at less cost! Second, on big jobs the Dempster-Diggster is without equal for working in tight places. The Dempster-Diggster is available in either of two types of traction—pneumatic (Type GRD) or crawler (Type CR). Both types are supplied in two models—the Standard (Model 100) or High Lift (Model 100-HL). Our new catalog No. 1032, with over 35 illustrations and complete specifications, shows how this revolutionary shovel can cut your costs tremendously. For your copy fill in the attached coupon and mail today!

DEMPSTER DIGGSTER

Please send me, without obligation, your Dempster-Diggster Catalog #1032.

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WELLMAN *Williams Type*

FAST BUCKET OPENING SPEEDS OPERATIONS

• Double-hinge construction on Wellman's multiple-rope bucket permits faster opening than a single hinge. This speeds up operations, also gives a bigger spread in the open bucket for the same headroom.

Wellman's welded-design buckets offer you better performance and longer service. In all types and sizes you'll do better with Wellman!

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Write for free descriptive bulletins.

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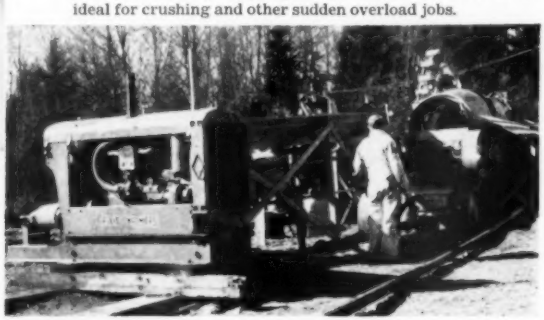
RUGGED A-C ENGINES *Cost less*

-to own

—because they are *mass produced* along with engines by the thousands for tough tractor service. Users benefit from these savings, as well as interchangeability of parts and other advantages of mass production.

There are further savings in getting *exactly* the power needed. Any power requirement can be filled economically with the four sizes of A-C Power Units—15 to 74 b. hp. They can be used singly or two or more together.

Ability to develop torque quickly makes A-C Power Units ideal for crushing and other sudden overload jobs.



-to use

A-C Power Units run inexpensively on gasoline, low-grade fuel, natural gas or butane. Their "tractor service" stamina keeps them on the job during critical work periods—avoids loss of valuable time due to shutdowns, helps build product acceptance and good will. Service facilities are nation-wide.

Get all the facts on rugged, high-torque A-C Engines for dependable, *low-cost* power. Our power engineers will gladly help select the correct unit for your needs.

ALLIS-CHALMERS
TRACTOR DIVISION — MILWAUKEE 1, U. S. A.

UP TO 99%?

Research Corp. Engineer — Yes sir, we are now in a position to offer our equipment and experience gained in other industries to cement plants for the removal of dust from cement plant furnace gases.
This experience enables us to guarantee any efficiency up to 99% depending on your individual requirements.

Plant Manager — What about draft loss?

Research Corp. Engineer — It's extremely low —only a few tenths of an inch of water.

Plant Manager — Do you actually guarantee performance?

Research Corp. Engineer — Absolutely. And you can depend upon Research Corporation because of our wide experience in the field of electrical precipitation. That's your yardstick of performance.

For more data on Research-installed Cottrells, send for Bulletin 500

RC 126

RESEARCH CORPORATION

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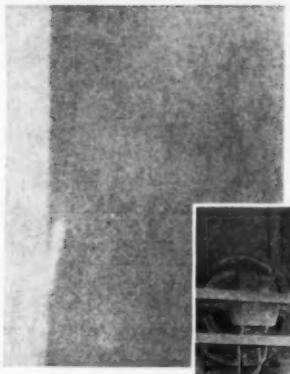
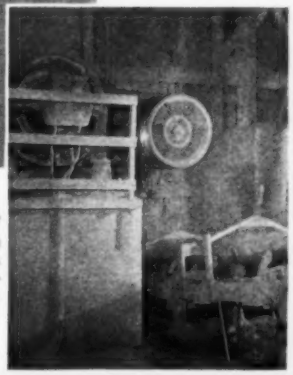
Dust is Deadly!



BEFORE—This photo was taken at the crusher before the Johnson-March System went into operation. Heavy dust accumulation resulted in this negative-like photo.



AFTER—A few minutes after the Johnson-March System was put into operation, dust was eliminated.

STOP IT!
at 1/10 the usual cost!

The top photo is NOT EXAGGERATED! It's an actual unretouched photo taken in a typical rock crushing plant. Dust was so thick the camera was incapable of registering details.

Hundreds of rock crushing plants are successfully using the J-M System at such sources of dust as primary crushers, secondary crushers, conveyors, elevators, screens and unloading bins. Names will be gladly furnished.

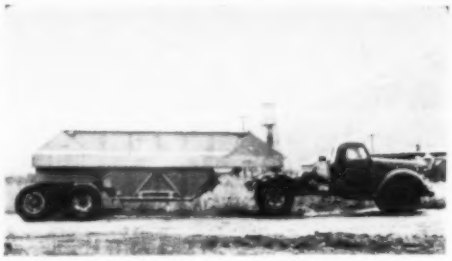
The J-M Dust Control System requires neither ducts, fans nor other cumbersome equipment. The system is simple to install and economical to operate—averaging less than 1/10 the cost of other types of dust handling systems. Installation does not affect normal plant operations.

Our engineers will be glad to discuss your dust problems at no obligation. Write today for complete details.

Johnson March

Specialists in Dust Control

Dept. PQ-2 • 1724 CHESTNUT ST. • Phila. 3, Pa.



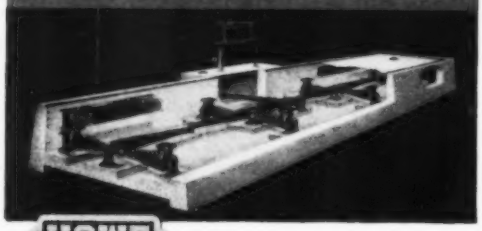
Landis 18 yard, off the road trailer. Overall length 23'9". Width 8'; height 8'. 2-door openings 1'8½"x11'9". Hopper of 3/16 high tensile steel. Tandem axle good for soft ground. Door opening by gravity, air closing from truck cab.

LANDIS TRAILERS CARRY MORE - MORE OFTEN!

With LANDIS TRAILERS in your fleet, you'll discover strong, smooth-surface construction permits heavier loading. Their end, side or bottom dump, plus safe, positive connection with quick response of controls mean faster, smoother, more efficient operation! Thus, you carry more per load — and you carry more loads per day! Check with LANDIS on the engineer-designed LANDIS TRAILER for your operations!

LANDIS STEEL CO.
Box 248 PICHER, OKLA. Phone 734

HOWE
Motor Truck Scales



HOWE

Howe Ball-Bearing Motor Truck Scales incorporate many outstanding design and construction features. Ball-protected pivots and bearings. Inside anti-frictions, hi-tensile strength cast iron, scientifically designed parts with added safety factors—assure you greater accuracy and long, trouble-free service. Sales and Service Branches in All Principal Cities.

Write for descriptive folder Form No. 678 Dept. PQ3

The HOWE SCALE Co.
RUTLAND, VERMONT

LUBRICATION ECONOMY

"LUBRIPLATE LUBRICANTS Satisfy our Requirements"

Stephens-Adamson Mfg. Co., conveyor manufacturers of Aurora, Ill. write us . . . *"We do not know of a single case of bearing trouble through faulty lubrication where LUBRIPLATE has been used!"*

1. LUBRIPLATE reduces friction and wear
2. LUBRIPLATE prevents rust and corrosion
3. LUBRIPLATE is economical to use

Write today for case histories of savings made through the use of LUBRIPLATE in your industry.

LUBRIPLATE DIVISION
Fiske Brothers Refining Co.
Newark 5, N.J.—Toledo 5, Ohio

The Different LUBRICANT!

DEALERS EVERYWHERE, consult your Classified Telephone Book

New Records in Gravel Reduction...RELIANCE Jaw Crusher

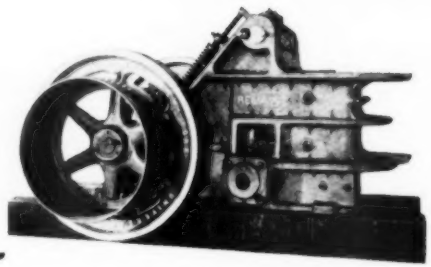
Chalk up top output and profit figures by single pass reduction of gravel with a RELIANCE Jaw Crusher.

RELIANCE Crushers are especially suited for this job—featuring rugged all-steel construction, low and large receiving openings, and long deep jaws for sure gripping and crushing. Jaws adjustable for fine or coarse product.

Fitted with Alemite high-pressure lubrication, smooth-running RELIANCE Jaw Crushers insure long, continuous service life and low-cost maintenance.

Write for Catalog No. 48, describing the RELIANCE complete line of sand and gravel washing and handling equipment.

UNIVERSAL ROAD MACHINERY CO., Kingston, N. Y.



SEE FOR YOURSELF—Next time try a

FORT WORTH TRANSCO QD SHEAVE

You will receive the best in service, sheaves, and V-belts when you buy a Fort Worth-Transco V-drive.

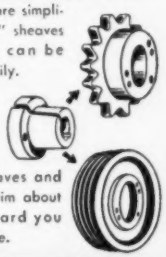
Two manufacturing plants and a large foundry designed to make V-belt sheaves assure volume production even in periods of short supply. Factory warehouses supplemented by numerous stocking distributors provide quick delivery on stock sizes.

The advantages of "QD" construction are many. We will be pleased to explain them to you at any time.

"QD" HUB ALSO FITS NEW FORT WORTH "QD" Roller Chain Sprocket

Speed changes are simplified and "spare" sheaves and sprockets can be carried more easily.

If your favorite distributor doesn't stock the Fort Worth QD line — both sheaves and sprockets — tell him about them. He'll reward you with better service.



Write for name of nearest distributor and for descriptive catalogs on "QD" Sprockets and Sheaves.

OTHER FORT WORTH PRODUCTS
ROLLER CHAIN SPROCKETS
SCREW CONVEYORS and ACCESSORIES
SCREW ELEVATORS
INDUSTRIAL FANS

WAREHOUSES:
CHICAGO
LOS ANGELES
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FORT WORTH STEEL AND MACHINERY CO.
Dept. 253 3600 McCart Street FORT WORTH, TEXAS

UNEQUALED

for Vibrating Screens . . .

Hendrick Perforated Metal Plate holds its uniformity of mesh throughout an unusually long service life. It can be heat-treated to increase its resistance to abrasion on tough jobs. Furnished either flat or corrugated, its full clearance obviates clogging. Labor costs are minimized because of the ease with which decks can be changed.

Available with any desired shape and size of openings, Hendrick Perforated Plate can be supplied in the proper gauges of tank, high carbon, high tensile, and abrasive-resisting steels, and in other commercially rolled metals.

Write for Copy of Hendrick Perforated Plate Catalogue.

SEE OUR CATALOG IN SWEET'S

Perforated Metals
Perforated Metal Screens
Wedge-Slot Screens
Architectural Grilles
Mitco Open Steel Flooring,
Shur-Site Treads, Armorgrids

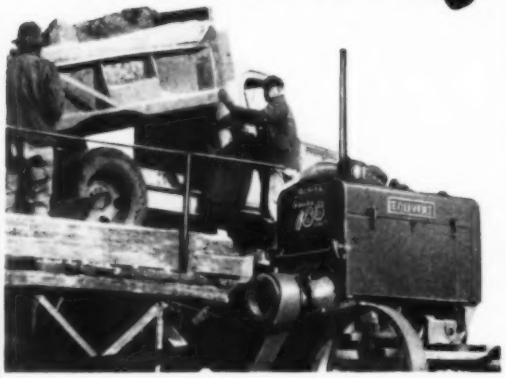
HENDRICK

Manufacturing Company

39 DUNDAFF STREET, CARBONDALE, PENNA.

Sales Offices In Principal Cities

Plenty of Pull for Pulverizing



Push up your production with Oliver power! Here's a hefty Oliver "188" unit in a multiple hook-up—pulling a primary jaw crusher, then hustling the stone along a conveyor to the pulverizer.

This big and rugged Oliver "188"—developing up to 58 horsepower—is a natural for rigorous outdoor work like this.

It's a husky *6-cylinder,* overhead valve engine that delivers smooth, steady power . . . that gets down and hangs on when the going gets heavy.

Economical power? Certainly! You have a choice of three distinct engine types for the fuel most economical to use—high compression units for gasoline and LP-gas, and an *easy-to-start diesel* that's ready at the command "go" in cold weather. Besides, all are provided with metered lubrication systems that save oil by keeping consumption at a nearly constant level despite wear.

Long life? *Extra* years of unfaltering service! For example, the "188" is equipped with a by-pass cooling system that permits quick, uniform warm-ups. Its big, precision-type bearings are quality made. And, when the time comes for its infrequent overhaul, you'll find the cost nominal. The wet cylinder sleeves are removable, quick and easy to replace. Smaller Oliver units are also available. See your Oliver dealer for power to fit your exact needs. The OLIVER Corporation, 400 West Madison Street, Chicago 6, Illinois.

OLIVER

OLIVER

"FINEST IN FARM AND INDUSTRIAL MACHINERY"

THE OLIVER CORPORATION, 400 West Madison Street, Chicago 6, Illinois — T16-3

Please send me literature on Oliver Power Units ☐

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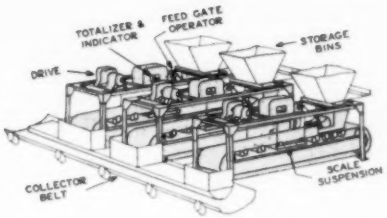
City.....State.....

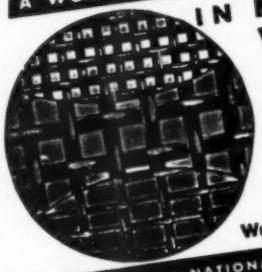


TRANSPORTOFEEDERS

Automatically transport, weigh, indicate, integrate, totalize tonnage and maintain a pre-set rate of feed for blending raw materials.

SINTERING MACHINERY CORP.
TRANSPORTOMETER DIVISION
70 Pine Street — New York 5, N. Y.

Industry has A WORLD OF CONFIDENCE IN NAT-ALOY WIRE CLOTH



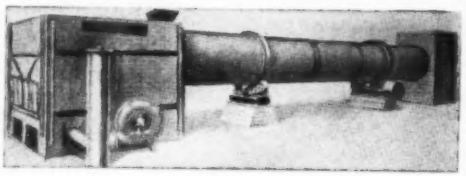
COVERS EVERY REQUIREMENT

. . . for a dependable, long-wearing, non-crystallizing Screen Cloth. Has "Nat-Aloy" Lock Crimp Meshes. Preferred for screening accuracy, economy and serviceability. All Sizes — All Meshes — All Gauges.

Write for Catalog No. 55

NATIONAL WIRE CLOTH CO., INC.
St. Paul, Minn.

DRYERS & KILNS . . *for all purposes*



W. P. HEINEKEN
ENGINEER & MANUFACTURER
50 BROAD STREET — NEW YORK, N. Y.

THE CONCRETE MANUFACTURER

A SPECIAL SECTION OF PIT & QUARRY

75 cu. ft.

BIGGER PROFITS with a BIGGER MIXER!

ANOTHER GOCORP FIRST

Producing lightweight blocks? If you're using a modern high production block machine, we'll bet your mixer operator is having trouble keeping up. Authorities agree lightweight aggregates require more mixing time. Unless you sacrifice quality you lose production and PROFITS.

The GOCORP 75 cu. ft. Batch Mixer solves this problem completely. The additional capacity permits the needed extra mixing time for your block machine to run at full speed. Once again, the people at GOCORP recognized a problem in the industry and came up with the answer.

The big "75" will be right at home in the spot now occupied by your 42 or 50. No increase in height.

Of course, the 75 cu. ft. Mixer has the same outstanding features as the other GOCORP Mixers—*GOHARD sectional liners . . . GOHARD ribbon blades . . . GOHARD dust hubs and rings . . . manifold water distribution . . . heavy-duty self-aligning bearings . . . "Mix-Timer" equipped—assures minimum mix time . . . air operated discharge door . . . custom-built extras to satisfy individual requirements. Other GOCORP Mixer sizes—12, 18, 28, 42 and 50 cu. ft. capacity.

*GOHARD is a special nickel chrome alloy casting manufactured to GOCORP specifications.

For modern, proven concrete products equipment write or phone

See SuPREMIX for conversions to Central Mix—Package Plants—Semi Portables

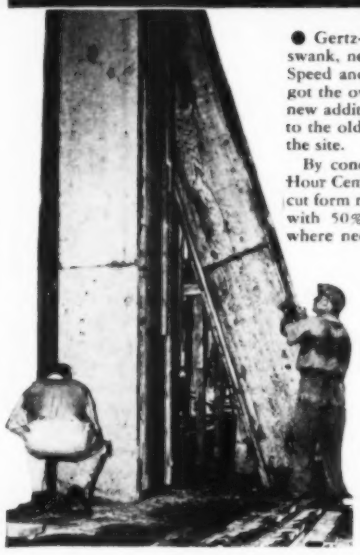
THE GENE OLSEN CORP.

403 GRACE ST., ADRIAN, MICH.

Earlier Occupancy at Less Cost!

TOP SPEED WITH 50% LESS FORMS

—thanks to Concreting Know-how and dependable 'Incor' High Early Strength



● Gertz-Flushing, north-shore Long Island's swank, new department store, is shown above. Speed and economy both considered, concrete got the owner's nod for the structural frame of new addition as well as for concrete alterations to the old bus terminal which occupied part of the site.

By concreting throughout with 'INCOR' 24-Hour Cement, FOSS, HALLORAN & NARR, INC., cut form requirements to the bone . . . top speed with 50% less forms! Stripped in 24 hours, where necessary, dependable 'Incor' high early strength kept the complicated job on schedule all the way.

Concrete work was completed a week ahead of schedule, making it possible to finish the job and open the store 25 shopping days before Christmas . . . thanks to concreting know-how and typical performance of America's FIRST high early strength portland cement.

That's Why They Ask for 'Incor'

Jobs like this explain why so many users ask for 'Incor'—and why so many Ready-Mix Operators make 'Incor'* concrete available as part of their good service. *Reg. U.S. Pat. Off.

B. GERTZ, INC., Flushing, N. Y.
Designed by:
ABBOTT, MERKT & CO., New York
General Contractor:
VERMILYA-BROWN CO., INC., New York
Concrete Contractor:
FOSS, HALLORAN & NARR, INC., Long Island City
Ready-Mix 'Incor' Concrete:
TRANSIT-MIX CONCRETE CORP., New York

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LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 17 MODERN MILLS, 125,600,000 SACKS ANNUAL CAPACITY

The CONCRETE MANUFACTURER March 1952

THE PRICE CONTROL MESS

LAST month on this page we discussed at some length the glum outlook for survival of our free enterprise system under the burden of the cryptic, confusing, and often meaningless regulations which have been imposed upon it by bureaucratic control agencies. It has been pointed out to us that our language was somewhat intemperate, and we were inclined, upon reflection, to agree with this view—until we had occasion in the line of duty to sit in on an open forum discussion of price control during the recent joint conventions of the National Sand and Gravel and Ready Mixed Concrete Associations. In the light of that discussion our own comments on the subject seem almost too temperate and restrained.

Walter H. Acheson, director of the building materials branch of the Office of Price Stabilization, was present at the meeting to answer questions. Mr. Acheson is not a bureaucrat by any conceivable definition of that overworked label. He is a former director of the National Ready Mixed Concrete Association, and his understanding of the industry's problems is thorough and intelligent. Within the limits of his authority and discretion, there is every reason to believe that he has done all that he could possibly do to ease the intolerable hardships which an absurd and quixotic law has imposed upon the thousands of small businesses that comprise the ready-mixed-concrete industry.

Mr. Acheson did not attend the meeting as an apologist for the Office of Price Stabilization, and he wisely avoided becoming involved in either apologies or explanations. But in a free-swinging question-and-answer session that might well have caused a less patient man to explode, he inevitably revealed many of the things that are most seriously wrong with OPS. He disclosed, for example, that he has drafted and repeatedly redrafted an order which would provide some relief for the painful squeeze brought on by rising transportation costs. His efforts along this line have been persistently stymied at higher policy-making levels of OPS.

He was asked at one point in the proceedings to estimate the amount of time which would be required for his office to process and act upon an application for price relief under the Capehart Amendment. He replied that it was impossible to answer this question because the forms involved in such applications were exceedingly complex, and his office has had relatively little experience with them.

Mr. Acheson's statements, in combination with the comments of others who took part in the discussion, made it abundantly clear that there is little prospect of tangible relief for the industry in the foreseeable future. After more than a year of discussion there seems less likelihood than ever that OPS can or will draft a tailored regulation for the concrete industry. Meanwhile, the cost of practically everything the producer must buy to stay in business—labor, trucks, parts, gasoline, batteries, delivered raw materials—climbs inexorably. There is a strong possibility that before long the industry will be faced with a further increase in transportation costs.

Whether it was so intended or not, price control as now administered has proved to be one of the most vicious forms of class legislation ever inflicted upon American industry. It has placed small concerns in highly competitive fields squarely in the middle. They lack the time, facilities, legal talent, and financial resources to obtain relief from the intolerable pressure applied from all sides, and in any event OPS appears to have neither the means nor the inclination to process their applications. For the most part the program has succeeded in controlling prices where control was wholly unnecessary, and failed miserably where the need was greatest.

There is plainly no hope of remedy within the present framework of OPS. There is always, however, the hope that political pressure, applied with sufficient persistence, might topple the structure. Since the problem has always been essentially political in nature, we believe that our industries would be well advised to fight it in the political arena.

William M. Avery

A lot of Blockmakers Choose MODERN *Chase* CONCRETE BLOCK RACKS

■

Good Reasons for

Chase

Installations

■

Cost no more than ordinary racks

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Built of corrosion resistant high strength alloy steel

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Improved rigid side sill connection

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Easily assembled. Require no special tools or welding

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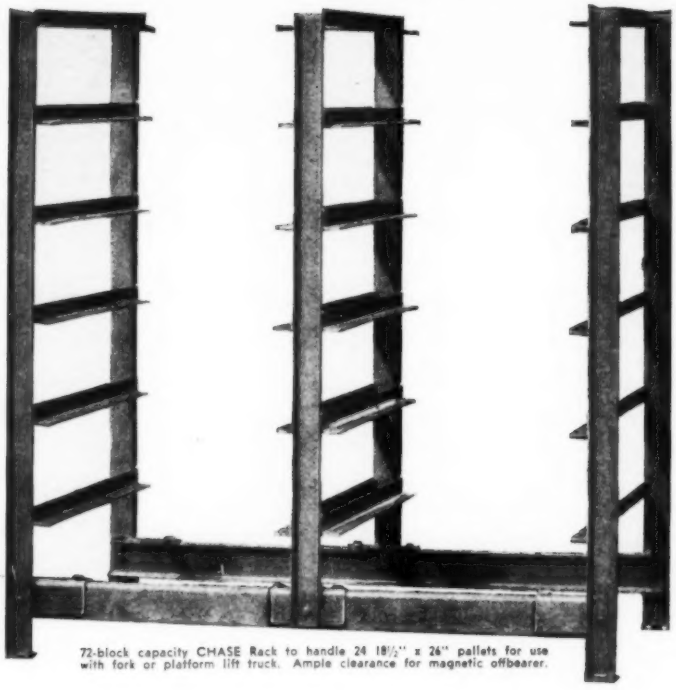
Shipped knocked down for low freight cost



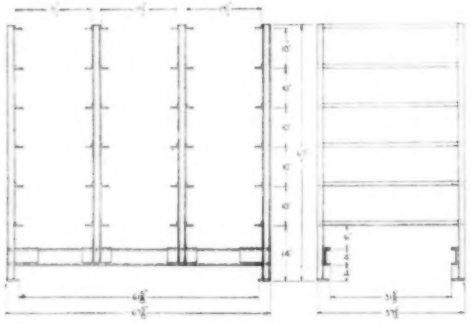
72-block capacity CHASE Rack to handle 24 18½" x 26" pallets for use with fork or platform lift truck. Ample clearance for magnetic offbearer.

The progressive concrete block producer needs the best racks available to complement his block-making equipment.

That is why manufacturers all over the country insist on CHASE Racks that combine practical design with sturdy construction. These CHASE Racks are furnished in any style or capacity rack or car.

PALLETS

We can supply plain steel pallets to any size required, as well as pallets for rack shown above.



72-block capacity, 3-compartment Rack, for handling either 18½" x 18½" or 18" x 18" pallets.

CHASE RACKS — CARS & TRUCKS

CHASE FOUNDRY & MFG. CO., COLUMBUS 7, OHIO

news of the concrete industries

R.M.C. Producers Learn Terms of Renegotiation—Exemption Is Sought

According to word from John T. Sapienza, tax counsel for the National Ready Mixed Concrete Association, there is no provision in the Renegotiation Act of 1951, nor in the tentative regulations recently issued, for the exemption of ready-mixed concrete from renegotiation. Moreover, it will be impossible to obtain an exemption similar to that won during World War II, because that exemption was based upon the "standard commercial articles" provision of the 1943 Act, and Congress refused to include a comparable provision in the 1951 Act.

Mr. Sapienza indicated, however, that in later issues of the 1951 regulations some form of exemption for ready-mix will be obtained under other provisions of the 1951 Act. Meanwhile, he warned, producers should assume that their profits from sales of ready-mixed concrete under prime contracts with defense agencies, or under subcontracts under such prime contracts, will be subject to renegotiation under the 1951 Act if the receipts or accruals under such contracts amounted to more than $250,000 in any fiscal year beginning on or after January 1, 1951 (or to a ratable portion of $250,000 in the case of fiscal years ending during the calendar year of 1951).

According to Vincent P. Ahearn, N.R.M.C.A. executive secretary, the Association will request the Renegotiation Board to exempt ready-mixed concrete because no public interest is served in the industry's case by renegotiation, the public and the government being protected from excessive prices by normal competitive forces.

Building Materials Dealers Hold 3rd Annual Convention

The third annual Building Materials Dealers convention, sponsored by the Fischer Lime and Cement Company of Memphis, Tenn., was held on February 7 and 8 at the King Cotton Hotel in Memphis. Approximately 600 dealers attended the affair. Master displays of materials and specialized displays from a number of manufacturers represented by Fischer, interesting sales and business talks, and a citywide tour of Memphis were highlights of the two-day program.

W. N. Fry Jr., president of the Fischer Lime & Cement Co., opened the first session. Talks were given by W. F. McGee Sr., Fischer senior vice-president, John F. Humphreys, territory sales manager for Fischer, and J. W. Parshall, executive editor of *Building Supply News*, Chicago.

The tour of Memphis included inspection stops at the Fisher Life and Cement Company, the Fischer Steel Corporation, and the Fischer ready-mix and block plants. A Western style barbecue was served the visitors in the evening to conclude the day's activities.

Carroll L. Joachimi, assistant to the president of the Fischer concern, opened the second day's sessions. Harry L. Judd Jr., credit manager of the United States Gypsum Company of Chicago, Kenneth D. Lozier, vice-president and director of advertising and sales promotion for the St. Regis Sales Corporation, and Elmer Wheeler, salesmanship specialist, were the speakers of the day.

The appointment of K. E. Dixon as treasurer of the Preload Company, Inc., New York, was announced recently by A. W. Brown, chairman of the board of directors.

Coming Events

April 7-9, 1952—*Cleveland*. Seventh annual meeting and lubrication show, American Society of Lubrication Engineers. Hotel Statler.

June 23-27, 1952—New York. 50th anniversary meeting and exhibit, American Society for Testing Materials. Hotels Statler and New Yorker.

Ripley Named President Of S. California Assn. At Los Angeles Meeting

E. P. Ripley (General Concrete products, Van Nuys, Calif.) was installed as 1952 president of the Concrete Masonry Manufacturers' Association of Southern California at a dinner meeting of the organization held on January 29, 1952, in Los Angeles. Other new officers and directors are as follows: vice-president, Jack Allen (Hollostone Company, North Hollywood); secretary-treasurer, Leo Howard (Rio Hondo Dunstone Company, Montebello); directors: Homer C. Shirley (Superior Concrete Block & Building Supply Company, Temple City); L. Glenn Switzer (Transulite Blocks, Pasadena); J. D. Keogh (Keogh Bros. Concrete Products, Glendale); Roy S. Beal (Roy S. Beal Co., El Monte); William H. Kennington (California Brick & Tile Co., Rosemead); and William A. Grindle (San Joaquin Blocklite Co., Selma).

In a message to the membership, president Ripley declared his determination that this year shall be one of real achievement for the group: "It is probably not necessary to mention to you that the government has planned to cut the rate of private home construction by 25 to 40 percent. Tilt-up and clay brick construction likewise threatens our volume, as do higher taxes on the incomes of prospective purchasers of garden walls and other home-improvement activities. In order, therefore, to maintain or increase the business of our plants, we must increase considerably the ratio of masonry to frame and other types of construction. Unless we succeed, we shall be badly squeezed between increasing costs of operation and frozen prices, without the compensating factor of a higher rate of sales."

President Ripley outlined some of the definite things to be done: (1) develop more and better sales techniques; (2) settle with the building departments the specifications for cess-pool blocks; (3) keep alert to all proposed changes in building codes which forever seem to penalize the concrete-masonry industry; (4) expand membership, or find new sources of revenue for the association; (5) establish dues on a more current basis.

Because the market is broad, profits big, and investment moderate, you ought to manufacture Champion

CEMENT DRAIN TILE

You're passing up opportunity of enlarging your volume and increasing your income if you're not making Champion cement drain tile.

Millions of drain tile are used every year for farm drainage alone. Other huge quantities are used for road building, reclamation projects and other purposes. More millions are needed if supply is to keep pace with demand.

Men already in the concrete product industry are in ideal position to make Champion drain tile. It's an activity that dovetails with block making. Utilizes time, space and equipment that might otherwise be idle. Doesn't require a large investment.

Economic Factors Favor Local Manufacturing

Competition can be discounted. Clay tile is made in far-away plants. Being made from clay it must be baked to usable hardness. That takes coal, and coal is costly. Then come the added burdens of freight, distribution and breakage—all of which explain why clay tile, compared to cement tile, is higher priced.

Champion cement tile is made by local plants, using local materials and local labor. No baking costs. No freight costs. No distribution costs. That's why local Champion manufacturers can save money for tile users and make generous profits for themselves.

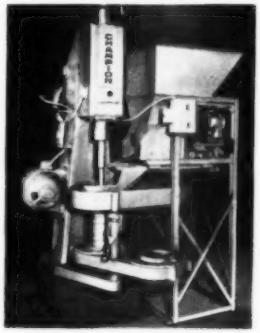
THE CHAMPION is backgrounded by more than 40 years' experience in building drain tile machines

The Champion is compact, sturdy and easy to operate. Makes the finest drain tile on the market: "So dense—so firm—so fully packed." Every one a true concentric. Every one ribbed for extra strength.

The Champion occupies only sixteen square feet of floor space. Requires no skilled labor. Requires little attention because main working parts are completely enclosed in a sturdy housing and run in oil. Fully self-contained and ready for operation.

Double compacting — first by packer shoes, then by a swiftly rotating packer head — results in a dense, strong and smoothly troweled unit.

The Champion makes all the popular sizes up to 12 inches in diameter. All 12 inches long.



Write for Literature

Write for Champion literature. Gives interesting information on cement drain tile business and describes the Champion equipment.

Concrete Equipment Co.
532 Ottawa Avenue Holland, Mich.

Automatic Feeding

The new Champion Automatic Feeder (optional equipment) reduces drain tile manufacture to a one-man operation. Completely eliminates the cost of manual feeding. Pays back its cost in a short time. Operated entirely by electrical controls. Easily and quickly attached to production machine.

Marietta Concrete Corp. Names Hindman, Stelzle To Important Posts

Two appointments have been announced by officials of The Marietta Concrete Corporation, Marietta, Ohio. Robert F. Hindman has been named general manager of the newly-created lightweight aggregate division of the firm. The division was established to test, produce and distribute Beslite, a Marietta product made of expanded clay which is used in place of gravel and sand in making concrete.

Mr. Hindman will also supervise complete laboratory research work for testing

R. F. Hindman

R. C. Stelzle

and developing new uses for Beslite. He will work closely with architects, engineers, and builders.

Before joining Marietta Concrete Mr. Hindman was associated with the United States Engineers, the Ohio Highway Department Testing Laboratory, and the Lehigh Portland Cement Company. During World War II he was an engineering officer with the U. S. Navy. Concurrently it was announced that Robert C. Stelzle is the manager of the precast concrete panel plant of the corporation.

Mr. Stelzle, a chemical engineer, was previously associated with the Republic Fireproofing Company, and from 1945 to the time of his new appointment was plant manager of the Cemenstone Corporation of Pittsburgh, Pa.

The Marietta firm recently completed construction of a new $150,000 plant for the production of insulated precast concrete wall panels.

Panels are 8 ft. by 10 ft. by 5 in. and are made of laminated layers of concrete each 1¾ in. thick, separated by 1½ in. of rigid insulation. The panels are cast on muslin in steel forms. Metal inserts cast into the slab permit the panels to be bolted directly to the steel framework of a building. Marietta spokesmen estimate that these panels will save up to 40 percent of construction costs when used in place of standard brick masonry walls. The panels are produced by a continuous production line method in the new plant and can be made with concrete using ordinary aggregate, or with Beslite.

T. L. Amis, Wamix President, Heads 1952 Tax Conference

Thomas L. Amis, president of Wamix, Inc., Dallas, Tex., ready-mix concrete manufacturers, has been named national chairman of the Young American Business Conference for 1952, it was announced on January 19.

This body, a national organization concerned with studies and recommendations pertaining to the Excess Profits Tax law of 1950, spearheaded the drive in 1951 which resulted in broadening the application of the "growth company" formula, and the enactment of EPT ceilings for new corporations. Mr. Amis served as vice-chairman of the conference last year.

The Y.A.B.C. will launch a renewed effort for further corrections of EPT inequities in 1952, the new chairman announced.

Block and Vault Plants Destroyed in Two Fires

A fire which gained a head start before being noticed by neighbors destroyed the Calabria Cement Block Company's plant at Aliquippa, Pa., on January 19, Facilities and equipment worth $100,000 were lost.

A few days earlier a plant producing concrete burial vaults near North Madison, Ind., was destroyed by fire. According to Walter F. Jones, proprietor, the loss was about $35,000.

New Plant of Thorn R.M.C. In Operation at Provo, Utah

A $100,000 plant was recently completed by the Thorn Ready-Mix Concrete Company, Inc., at Provo, Utah, where the firm has been doing business since 1944.

The firm maintains a second ready-mix plant in Provo and also a plant for producing sand and gravel and asphaltic materials at Spanish Fork nearby. Most of the cement used by the Thorn operations is hauled to Provo from the Ideal Cement Company's Devil's Slide plant in a "cement train"—a semi-trailer and a full trailer—capable of carrying a load of more than 25 tons.

Heading the company are Grant S. Thorn, president and general manager; A. O. Thorn, vice-president; Paul Thorn, secretary-treasurer; and J. R. Bingham, general superintendent. A. O. Thorn, father of Grant and Paul, founded the concern.

Ajax Corporation Purchases F. & T. Ready-Mix Plant

The F. and T. Corporation's ready-mixed concrete plant at Tooele, Utah, has been purchased by the Ajax Corporation, according to an announcement by Joe Ajax. The plant and equipment, which is only about a year old, is valued at more than $100,000.

Mack Outzen will assist Mr. Ajax in the management of the firm, and they plan to run the plant throughout the year. A special feature of the company will be a plan to sell concrete on the installment plan.

The Moline Consumers Company has opened a new ready-mixed concrete plant at Moline, Ill. Crushed gravel and sand are also produced by the firm.

1952 A.C.I. Convention Features Vital Problems Of Concrete Industries

Emphasis at the 1952 convention of the American Concrete Institute, Netherland Plaza Hotel, Cincinnati, O., February 26-28, was on economy in design and construction and on good concreting practice to produce more durable structures.

The three-day program included sessions on prestressed concrete, durability and curing, ultimate load design, materials and properties, general design problems, construction, a panel discussion of problems on small concrete jobs, and the annual open session on concrete and cement research.

Of two papers on prestressed concrete design and construction the first reported economic comparisons for 260 different designs for conventional and prestressed concrete reservoirs. The second reviewed the design of a prestressed concrete bridge and the construction problems encountered in assembling and prestressing the precast units.

Durability of concrete was considered in five papers. The important field of concrete railroad structures was reviewed by representatives of two major railways; durability in pavements and hydraulic structures completed this part of the session. A round-table discussion on curing pointed up the requirements for pavements, structural concrete, mass concrete, and canal linings. Fundamental principles of curing and the action of various curing agents were discussed.

An introduction to the session on ultimate load design gave the historical background of the ultimate load theories, while five other papers summarized research programs in this field, demonstrated the practical application of ultimate load theories to the design of sections, and discussed load factors in this type of design.

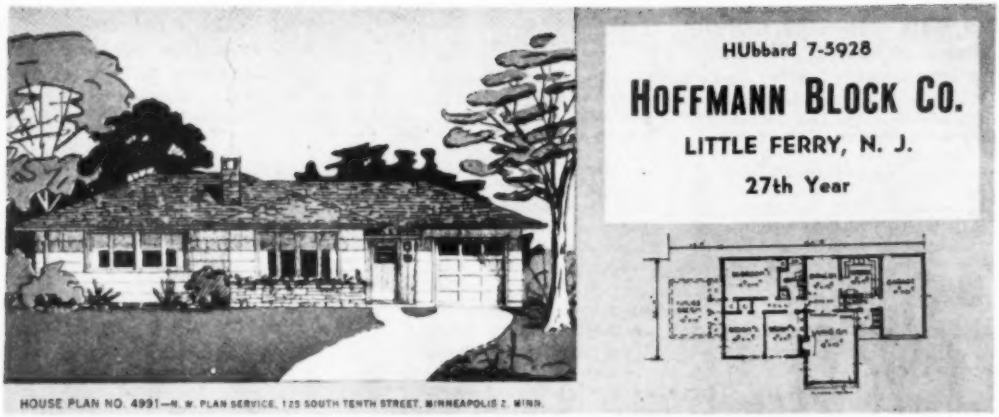
Under materials and properties the following topics were covered: thermal expansion of aggregates, effects of temperature changes on concrete as influenced by aggregates, calcium chloride in concrete, creep of concrete, and the use of fly ash to reduce cement-aggregate expansion.

In the design session, field practice in lightweight concrete, economical design of concrete beams, developments in reinforcing steel and concepts of safety, and the analysis of skewed rigid frames were reported.

Papers on applications of vacuum concrete, concrete temperature control in mass concrete, small building construction, and insulation of forms to protect new concrete from freezing comprised the session on construction. A movie showed a machine method of lining pipes with concrete.

The annual research session provided glimpses of progress in various studies of concrete under way at public and private laboratories.

The panel discussion emphasized problems on the small concrete job. Panel members were selected on the basis of their experience on this type of work.


HUbbard 7-5928
HOFFMANN BLOCK CO.
LITTLE FERRY, N. J.
27th Year
HOUSE PLAN NO. 4991—H. W. PLAN SERVICE, 125 SOUTH TENTH STREET, MINNEAPOLIS 2, MINN.

• An attractive blotter ad is used with telling effect by a New Jersey block maker.

California Products Plant Offers New Concrete Units

The opening of the Santa Fe Cement Products Company, Azusa, Calif., has been announced by its owners, Frank Perricone and Albert E. Shepper. Developers and manufacturers of a new product known as "Desert Brick," the owners plan to carry a complete line of concrete products.

"Desert Brick" is hand-made and comes in a variety of colors. It is used for patios, barbecues, plant wells, and store fronts. Another new product developed by Perricone and Shepper is a stone tile available in several colors, used primarily in home construction.

Atlanta Aggregate Company To Open Plant at Marietta

The Atlanta Aggregate Company, Inc., a subsidiary of the Birmingham Slag Company, was successful in its application to re-zone from residence to business classification a location in Marietta, Ga.

J. H. Clotfelter, treasurer of the Atlanta firm, stated that plans for the construction of the concrete-block manufacturing plant are now being completed.

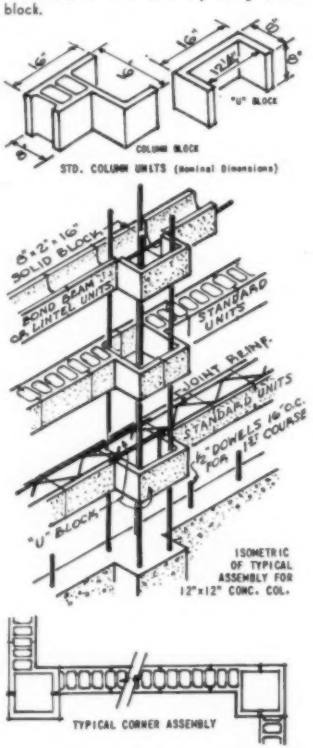
Washington Products Assn. Develops "Column" Block

The interesting application of the so-called concrete "column" block is shown in the accompanying sketches, reproduced from a recent bulletin issued by the Concrete Products Association of Washington from its office in Seattle.

The development of this type of unit is expected to have significant results in advancing concrete masonry construction in the Pacific Northwest, since it offers the opportunity to design *reinforced masonry* structures which combine the virtues of reinforced concrete and concrete masonry without destroying the homogeneous appearance. Heavy column loadings, simplified construction, and increased masonry stability are a few of the important advantages. The block may be used with steel columns also, if desired, and provides fireproof covering for them. Comments already received from masons and contractors indicate genuine satisfaction with construction incorporating this unit.

The drawings show the two essential parts of a standard unit, and the method of wall assembly with standard and bond beam or lintel units, with or without joint reinforcing. It is emphasized that the column blocks must be in place for at least 24 hours before the vertical columnar core is filled with concrete.

• Method of wall assembly using column block.



60-ton Load Test Conducted On Graystone Pipe Section

A test was made recently at the Graystone Concrete Products Company, Seattle, Wash., to determine the beam strength of a reinforced concrete pipe section. The test, in which a load in excess of 120,000 lb. was applied to an 8-ft. section of 60-in. inside diameter extra-strength pipe, was made for and under the direction of the City of Seattle engineering department.

The test results successfully demonstrated the ability of a standard reinforced concrete pipe section to carry its design load even though supported only at the ends, provided that properly designed cradle supports are used.

Among those witnessing the test were F. M. Kettenring, Graystone Concrete Products Company; C. M. Howard, engineer for Graystone; and Bert Harrison, Harrison Pipe Company, Tacoma, Wash., who represented the research committee of the Concrete Products Association of Washington.

Also present were the following officials: Henry Fitch, senior sewer design engineeer for the city of Seattle, under whose direction the test was run; Harold McMorris, senior engineer, construction division; Robert Wartelle, associate engineer, construction division; Ben Mason, supervising senior testing engineer, testing laboratory; and William McNamara, senior engineer, sewer maintenance division, all of the city of Seattle; and Frank Lang, physical testing engineeer for the Washington department of highways.

A. E. Morris to Supervise Universal's 24th Pipe Plant

Universal Concrete Pipe Company, Columbus, O., has made it an even two dozen by opening a new plant at the south end of Court Street in Florence, Ala. This brings Universal's network to 24 plants in ten states.

The Florence installation will be under supervision of A. E. Morris, Decatur, Ala. It will make pipe in 4-, 6-, and 8-in. sizes. Larger sizes will be shipped in from the Decatur plant and stocked at the Florence yard.

Ohio Ready Mix Producers Set Record Attendance at Chicago

MEMBERS and guests of the Ohio Ready Mixed Concrete Association held a well attended luncheon meeting during the recent Chicago convention of the National Ready Mixed Concrete Association. Herbert Rusk, president of the Ohio group, disclosed that the Chicago meeting was the largest in the history of the organization. Mr. Rusk said that current membership included 87 active and 24 associate members.

R. P. Mumford reported briefly to the gathering on the forthcoming ready-mixed concrete short course to be held at the University of Akron, Ohio, on March 12, 13 and 14. Mr. Mumford pointed out that short courses were presented prior to World War II but had been discontinued for several years. He expressed the hope that it would be possible in future years to hold the short course in various sections of the state. The course of study, he explained, has been designed to present to batchers, plant operators, and dispatchers the what and why and how of producing consistently good concrete. The method of presentation will not be highly technical, Mr. Mumford said. It is planned to cover the making of cylinders, the conduct of slump tests, the making of moisture determination tests, the breaking of cylinders, and similar laboratory techniques. Theoretical discussions will cover such subjects as hydration, the water-cement ratio, and air-entraining. An entire day, Mr. Mumford said, will be devoted to the study of the design of concrete mixes under the direction of Stanton Walker.

The principal speaker at the Ohio group luncheon was C. M. Weinheimer, head of the Mechanical Division, Engineering Laboratory and Research Department of the Detroit Edison Company. His paper was entitled *Some Factors in Using Fly Ash in Concrete Mixers.* Mr. Weinheimer briefly reviewed some of the early history of fly ash and also described some of the physical properties of the material produced and marketed by his company. He said that in 1951 from 2,250,000 to 3,000,000 tons of fly ash was collected and produced in the United States—mostly east of the Mississippi River, and practically all from east of the Rocky Mountains.

In explaining the action of fly ash in concrete, Mr. Weinheimer reminded his audience that in hydrating, portland cement always creates a certain amount of free lime, in some cases as much as a cubic foot of free lime in a cubic yard of concrete. When this free lime comes in

R. P. Weinheimer, Detroit Edison Co., principal luncheon speaker.

contact with water, the speaker said, it has the tendency to leach out. All puzzolans, among which fly ash is numbered, react with free lime to form certain insoluble compounds with cementitious properties. It is for this reason, Mr. Weinheimer said, that addition of fly ash to concrete mixes produces material with better physical properties and lower permeability, the magnitude of the improvement depending in a large measure upon the fineness of the puzzolan used.

The speaker stated that the use of fly ash should achieve an improvement in workability, greater plasticity, less tendency of the concrete to bleed and of the aggregates to segregate, and better all-around durability. Drying, shrinkage, and excessive expansion, he believes, have also been reduced by means of using fly ash.

In discussing some of the practical considerations involved in the use of fly ash, Mr. Weinheimer pointed out that for economic reasons bulk handling is much to be desired. Any handling system would require installation of bins, some means of elevating bulk fly ash, and a means for discharging measured amounts of materials into the batcher. Ordinary bucket elevators can be used to handle fly ash with good success, provided that certain minor modifications are made, and pneumatic systems also work extremely well.

According to Mr. Weinheimer, not more than 175 pounds of fly ash should be used per cubic yard of sand and gravel concrete; when the aggregate used is crushed stone, the amount of fly ash used may materially exceed 175 pounds; and in the case of crushed slag, it may even go as high as approximately 300 pounds. He noted that when used in combination with air-entraining cement, fly ash has a tendency to reduce the amount of air entrained, and it therefore becomes necessary to compensate for this by using additional air-entraining material.

Mr. Weinheimer told his audience that fly ash is one of the largest sources of puzzolanic materials in this country. It is an especially desirable source of puzzolanic material because of the wide distribution of production and the availability in most large industrial areas. Stoker furnace ash, according to the speaker, is not now acceptable for use in concrete, because the carbon content is almost invariably in excess of 50 percent. In selecting a source of fly ash, Mr. Weinheimer said, the user should inquire into both the carbon content and the particle size of the material, and he should determine if the proposed supplier has both an adequate daily productive capacity and an adequate dry storage system. Because of the importance of uniformity as to particle size and carbon content, he expressed the opinion that in many cases it might be desirable for the user to obtain his entire requirements from one plant.

Although many extremely valuable studies have been made of fly ash in various laboratories, Mr. Weinheimer expressed the view that each user should make or have made his own determinations of the effect of the material in his particular type of operation. In this connection he pointed out that the American Society for Testing Materials is at the present working on fly ash specifications. Mr. Weinheimer does not believe that fly ash is a "cure-all" of the problems that arise in connection with concrete. It is helpful, however, he pointed out in connection with many such problems, and he reminded his listeners that air entraining and fine grinding have not been outstandingly successful as panaceas.

22nd Annual N.R.M.C.A. Convention

another ON THE SPOT report

THE 22nd annual convention of the National Ready Mixed Concrete Association, which was held February 11 to 15, 1952, inclusive, at the Conrad Hilton (Stevens) Hotel in Chicago, in conjunction with the 36th annual convention of the National Sand and Gravel Association, was in every way the most successful yet held. In attendance, in the importance of the subjects discussed and the caliber of the speakers, in the size and quality of the Machinery Exposition, and in other ways it set new records. The combined conventions had a total registration of over 3,395, as compared to the previous record of 2,300 plus in 1950. Registration during the first three days included 1,666 producers, 1,577 manufacturers' representatives, and 152 ladies.

The program included addresses by authorities from inside and outside the industries, panel discussions, and open forums on such important subjects as defense program and construction activity, the highway picture, merchandising problems, truck axle loadings, aggregates and the life of concrete pavements, price control, percentage depletion, priority ratings, allocation of materials, wage-and-salary regulations, employer-employee relationships, successful

Largest machinery exposition a major attraction

litigation against discriminatory practices of unions, recent decisions of National Labor Relations Board, prospecting for sand and gravel, sand classification, zoning restrictions, concrete admixtures, safety practices and other industry, operating and technical subjects of interest to producers. Question-and-answer periods following each address gave those present an opportunity to obtain information on individual problems, and the open forums were participated in freely to an extent which continues to make them a must for future conventions. If anyone left these meetings with any unsolved problems, it was probably his own fault.

In keeping with the practice followed in recent years, there were combined meetings of the two groups on subjects of mutual interest and separate meetings where subjects of interest to only one were discussed. In this report the sessions of particular interest to ready-mix producers are covered in detail, and the combined sessions are described in detail in the N.S.G.A. report in the March issue of PIT AND QUARRY, as are also those sessions of direct interest only to sand-and-gravel producers.

The machinery exposition held in conjunction with these meetings was also a record-breaker in size and in the completeness and quality of the displays, and it was undoubtedly one of the main reasons for the record attendance. The rapid expansion of the industry in recent years and the even more rapid growth of the associations was also a factor. There

Richard K. Humphries (Pacific Coast Aggregates, Inc., San Francisco, Calif.), new president of N.R.M.C.A., receiving congratulations from his predecessor, Norman J. Fredericks (Koenig Coal & Supply Co., Detroit, Mich.).

In this group of new N.R.M.C.A. officers and directors are George R. Bathe (Ready Mixed Concrete Co., Omaha), director; Herbert G. Jahncke (Jahncke Service, Inc., New Orleans), vice-president; R. K. Humphries, president; Robert C. Collins (Warner Company, Philadelphia), vice-president; Louis C. Schilling (I. E. Schilling Co., Miami), treasurer.

Norbert Eckert, safety engineer for W. E. Anderson Sons Co., Columbia, Ohio, receiving the Class A safety award from Robert Mitchell. Norman J. Fredericks at right.

Tops All Other Attendance Records

is a growing realization among producers that at these meetings they can obtain information and advice vital to the successful operation of their business under present conditions which most of them cannot obtain elsewhere.

In keeping with the policy of recent years, the formal entertainment was limited to a joint luncheon and an evening reception given by associate members, which provided a tempting and seemingly inexhaustible array of "snacks", as well as liquid refreshments, and an excellent opportunity to mingle and make new acquaintances. A hospitality room was also provided on other evenings for serving refreshments. Some, particularly old-timers, bemoaned the old intimacy, the cabarets and banquets when the attendance was in the hundreds instead of thousands, but the majority seem to feel that this meeting is now too big for this setup, and that open evenings are preferable so that everyone can seek his own company and entertainment.

The same procedure was followed with entertainment for the ladies. There was a "brunch" the first morning which gave them an opportunity to get together, make new acquaintances, and make plans for the week. At this brunch the entertainment consisted of a 2-hour condensation of "South Pacific".

Officers The new president of the National Ready Mixed Concrete Association is Richard K. Humphries (Pacific Coast Aggregates Inc., San Francisco, Calif.) who, although probably the youngest man ever to have held that high office, has given many years of unselfish service to the industry and association in various capacities. The choice is particularly appropriate, as his company will be one of the hosts when the two associations meet in San Francisco next year. The other new officers are Robert C. Collins (Warner Company, Philadelphia) and Herbert G. Jahncke (Jahncke Service, Inc., New Orleans), vice-presidents; and Louis C. Schilling (I. E. Schilling Company, Miami), treasurer. It was previously decided to eliminate the office of secretary, as the work partially duplicated that of the executive secretary, and the similarity of titles caused some confusion; the office of a second vice-president was created instead. In addition to these gentlemen, the members of the executive committee are Robert Mitchell (Consolidated Rock Products Company, Los Angeles); H. J. Brown (Baraboo Concrete Products Company, Baraboo, Wis.); Walter M. Keeler (Walt Keeler Company, Inc., Wichita, Kans.); and Russell P. Mumford (Beckley & Myers Company, Springfield, Ohio).

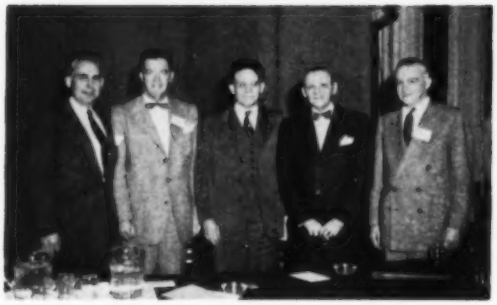
Elected as a director to replace William W. Nass (resigned) was T. P. Eldred Jr. (American Hard Wall Plaster Company, Utica, N. Y.). New directors for the three-year terms are C. H. Latham (The Lynn Sand & Stone Company, Swampscott, Mass.); M. Eugene Sundt (Albuquerque Gravel Products Company, Albuquerque, N. M.); Lee T. McCourt (Fischer Lime & Cement Company, Memphis, Tenn.); Charles P. O'Leary (Terre Haute Concrete Supply Corporation, Terre Haute, Ind.); George R. Bathe (Ready Mixed Concrete Company, Omaha, Nebr.); W. J. Hicklin Jr. (Capitol Concrete Company, Jacksonville, Fla.).

Coming Conventions At the annual meeting of the board of directors of N.S.G.A. on Monday morning February 11, it was decided that the 1954 annual convention and machinery exposition would again be held at the Conrad Hilton (Stevens) Hotel, the exact dates to be announced later. This decision was made only after long discussion with the N.R.M.C.A. board and with the manufacturers' divisions of both associations. There were many, especially among the manufacturers, who felt that Cleveland, with its public auditorium, offered advantages in the form of larger exhibit space, combined with adequate meeting rooms. The majority, however, favored Chicago because of its central location, greater hotel facilities, wider variety of outside entertainment and, last but not least, the location of the meetings and most of the conventioneers in the same hotel as the machinery exposition. There was some dissatisfaction among the comparatively few

L. H. Williams (Eugene Sand & Gravel Co., Eugene, Oreg.), receiving from Robert Mitchell the Class B award for the N.R.M.C.A. safety contest.

Herbert Rusk, addressing members of the Ohio Ready Mixed Concrete Assn.

F. G. Rubey (Dubuque Ready Mix Concrete Co., Dubuque, Iowa) and J. M. Walker (Superior Sand and Gravel Co., Phoenix, Ariz.).



Vernon E. Lohr (California Materials Co., Whittier, Calif.); O. W. Best (Consolidated Rock Products Co., Los Angeles, Calif.); Charles A. Horsky, Association counsel; Vincent P. Ahearn, Association executive secretary; and F. E. Schouweiler (president, Old Fort Supply Company, Fort Wayne, Ind.).

machinery manufacturers who had to accept exhibit space outside of the main hall, but these were assured that better arrangements would be made in 1954.

The 1953 combined conventions of N.S.G.A. and N.R.M.C.A. are, of course, going to San Francisco at the Fairmont Hotel, but definite dates have not yet been selected. The 1952 mid-year directors' meetings will be at the New Ocean House, Swampscott, Mass. The location for the 1953 mid-year board meetings will be decided at the 1952 mid-year meeting. Among the locations suggested are Buffalo, Los Angeles, and Bermuda.

President's Address In his address on the first day of the convention, President Norman J. Fredericks (Koenig Coal & Supply Company, Detroit), described some of the many and varied activities of the association during the last year. He said that the association is in excellent financial condition and that during the year just past it had attracted 71 new members and 13 new associate members for totals of 500 and 73, respectively, both new records. There are now members from 47 states, as well as several from foreign countries. In production, the industry set a new record of 38,000,000 cu. yd. of concrete in 1951, and sales topped the half-billion-dollar mark. Mr. Fredericks pointed out that in that year the industry used 66,000,000 tons of aggregates and 50,000,000 bbl. of cement, or about 20 percent of total cement sales, making it the cement industry's largest customer.

According to the speaker most of the operations in the industry are small, having an average of less than 20 employees; the number of operations having in excess of 100 employees is negligible. This, he said, makes the industry a small business, and the government has done little for it. In pointing out what a strong association can do for its members, Mr. Fredericks mentioned the cement shortages and the cost of getting out-of-area cement. These costs could not be passed on, and individual efforts to obtain price relief were unavailing until the association took action, with the result that partial relief was obtained.

Another activity that had received a considerable amount of the association's attention during the last year was the drive for a group insurance plan. According to Mr. Fredericks, such a plan will be available to all members within a few months. The permit has been granted, but the association is presently investigating several sources, so as to obtain the policy that will be most beneficial.

Manufacturers' Division The associate members of both associations held a joint meeting on Sunday afternoon preceding the opening of the convention for the primary purpose of formulating a recommendation to the boards of directors on the location of the 1954 show. It developed that opinion was fairly well divided on whether this should go to a city with a public auditorium or should remain at the Conrad Hilton Hotel in Chicago.

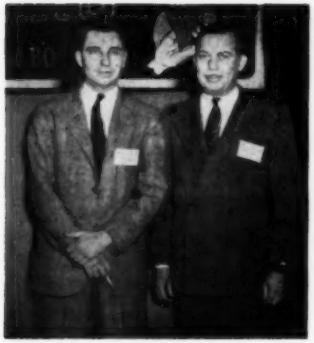
A luncheon meeting was also held during the convention. Ralph C. Johnson (Simplicity Engineering Company, Durand, Mich.), the outgoing chairman, presided and gave a report on activities during the last year. It was also decided to increase the number of directors from 11 to 12 for convenience.

R. D. Ketner (General Electric Company, Schenectady, N. Y.) was elected chairman of the Manufacturers' Division. C. B. Laird (Eagle Iron Works, Des Moines, Iowa) and J. Craig McLanahan (McLanahan & Stone Company, Hollidaysburg, Pa.) were elected vice-chairmen to serve with E. M. Heuston (Bucyrus-Erie Company, South Milwaukee, Wis.) and R. P. McKendrick (Blaw-Knox Division, Pittsburgh, Pa.). Added to the board of directors were J. B. Bond (Nordberg Manufacturing Company, Milwaukee, Wis.); J. E. Dunn (Allis-Chalmers Manufacturing Company, West Allis, Wis.); Austin K. Thomas (Chain Belt Company, Milwaukee, Wis.); and Emil Deister Jr. (Deister Machine Company, Fort Wayne, Ind.).

Ahearn's Report In his annual report to the two associations, Vincent P. Ahearn, executive secretary, gave the latest information on conditions in the industries and the regulations they are or may be called upon to observe. He said that ready-mixed-concrete production in 1951 increased almost 19 percent over 1950 to set a new record of about 38,000,000 cu. yd. The expenditures for new construction in 1951 were the largest in history, said Mr. Ahearn, but the actual physical volume was about the same as in 1950. Judging from present indications, the volume of construction will be somewhat lower in 1952, as will also the demand for aggregates. He also mentioned the increased capacity built by the cement industry during the past year which should result in little if any shortage of cement during 1952.

With respect to price relief for the ready-mixed concrete industry Mr. Ahearn mentioned the procrastination of OPS before finally permitting the industry to pass on the added cost of transportation of out-of-area cement. Both industries, he said, are still subject to the General Ceiling Price Regulation, which contains no provision for relief, even in hardship cases. What the industry needs is a tailored order or an amendment to GCPR which will set up area or individual relief; and the association, he said, will persevere in its efforts to get action of this kind. Many other subjects were discussed by Mr. Ahearn, including wage-and-salary controls, priorities, the Taft-Hartley Act, settlement of disputes, renegotiation, alternative computation of mineral properties, freight rates, percentage depletion, and safety.

Walker's Report Presenting his report on the engineering activities during 1951 which affect the ready-mix industry, Stanton Walker, director of engineering for the two allied associations, praised the fine cooperation he and his staff have received from the personnel of the University of Maryland School of Engineering. He cited the projects which have been carried out and are presently



R. Campbell (plant engineer) and A. Cummins, both of Harry T. Campbell & Sons, Towson, Md.

H. G. Meadows and T. R. Johnson, both of W. R. Meadows, Inc., Elgin, Ill.

Ray Russell (C. S. Johnson Co., Champaign, Ill.) and William M. Avery (senior field editor, Pit and Quarry, Chicago, Ill.).

being investigated as the main function of the comprehensive engineering program. The program is set up on a 50-50 basis, the N.S.G.A. and N.R.M.C.A. sharing the sponsorship, and a committee composed of members from both associations supervising the projects.

Primarily the laboratory work covering the ready-mix industry has centered around investigations of the durability of concrete, Mr. Walker said. Under this program various cements and admixtures have been studied in regard to resistance to freezing and thawing, the speaker pointed out. An automatic freezing-and-thawing machine installed two years ago is among the numerous facilities available at the laboratory to serve this purpose. Also under investigation during the last year, Mr. Walker continued, were the effects of temperature changes, air-entrainment qualities, and alkali activity on concrete. He warned that alkali reactivity is presenting an ever increasing problem, and that a great deal of the engineering program's efforts will be directed along these lines in the future.

Steps have been taken recently to increase the study of bituminous mixtures, as the pressing highway repair situation calls for an increasing supply of this surface material. Mr. Walker also made mention of the important place lightweight aggregates are occupying in the field. He stated that one of the functions of the engineering program will be to direct a great deal of attention to the needs of this fast-growing problem of the industry.

The overall function of the engineering program is to provide the association members with reports on conditions, specifications of materials, and to aid in devising methods of meeting these conditions and specifications, the speaker said. He stated that the engineering department can only represent the association to the federal agencies, and that although changes in specifications may be proposed by the department, the final decisions must come from the government. The principal duty of the engineering department is to serve the association as a body. However, he pointed out, the laboratory facilities are always available to individual members to solve their special problems. He extended the invitation of the department and the Association to all members to advise the laboratory of any such problems.

Safety *Why My Company Became Interested In Safety* was the subject of the talk given by Ralph H. Anderson, president, W. E. Anderson Sons Company, Columbus, Ohio. Mr. Anderson's company, in the rush of business that followed the war, was striving to produce concrete and get it delivered. In 1947 the insurance company covering the trucks doubled the rate for the last half of the year and threatened to raise it even higher. The company was considered a bad risk, with 53 over-the-road accidents which resulted in 17 personal injuries, 81 property damage claims, and 419 lost-time truck hours. This tremendous increase in insurance premiums really opened the eyes of company officials to the situation.

They found that poor driving was costing a great deal of money in insurance rates; lost time for trucks due to accidents was creating upset delivery schedules; and public rela-

D. F. Nickel (Don F. Nickel Equipment Co., Grand Rapids, Mich.); R. W. Meyer (Meyer Ready Mixed Concrete Co., Cadillac, Mich.); Morgan R. Butler (Butler Bin Co., Waukesha, Wis.); Dan Gettings (George P. Williams Co., Cleveland, Ohio); R. W. Jones (Alliance Builders Supply, Alliance, Ohio); and M. Knechtges (Grafton Lumber and Coal Co., Grafton, Ohio).

tions were bad as a result of the combination of damage and uncertain delivery schedules.

To correct this admittedly bad situation the company appointed a safety director who had specialized in traffic training. With this background a safety program was initiated which provided for cash incentives and penalties to drivers on the basis of their work in preventing accidents.*

Once the program had been initiated the results were immediately noted. Accidents decreased substantially, personal injury claims were entirely eliminated, property damage claims dropped, and lost truck time was greatly reduced.

On the basis of the first year's startling results the plan was carried on with continuing improvement every year. Although the number of trucks in operation has increased materially—from 67 units to 85—in the four years of operation of the safety plan the actual number of accidents, claims, and lost time has decreased.

Details of the plan also called for publicity. Newspapers, meetings, and banquets were used to inform the public of the campaign and to enlist the support of public officials. A marked improvement in public relations has followed. The great reduction in delays due to truck accidents has also helped public relations by permitting on-time deliveries, and by reducing damage to property.

In concluding, Mr. Anderson pointed out that a successful plan must be under the supervision of a person who has had specialized training in traffic work, and who can devote a large portion of his time to the program; that the safety plan must be an integral part of the company policy; that it is as important as the sales, service, and public relations departments; and that the plan must be worked at every day. This type of program, he said, will make employees conscious of their responsibilities and will make them into "ambassadors of goodwill" for their company.

Price Control Herbert G. Jahncke, Jahncke Service Company, New Orleans, presided at an open forum discussion of price control as it affects the sand-and-gravel and ready-mixed-concrete industries. By way of introducing the subject, Mr. Jahncke described how control has worked out in respect to the operations of his own company. Most of his remarks, as well as the subsequent discussions, pertained more specifically to ready-mixed concrete than to sand and gravel.

Mr. Jahncke pointed out that competition within the ready-mix industry has always protected the public from excessive prices. If prices go too high, the contractors, to whom the industry sells most of its output, can always produce their own concrete.

Price control, Mr. Jahncke said, caught his company with what they believe to be fair and adequate prices, and they were not immediately concerned with the problem of making increases. As a result of a tremendous construction boom in the New Orleans area, the company's volume of business in 1951 showed an increase of about 40 percent over 1950. But as a result of increased labor and material costs, total profit dollars increased only about 14 percent, and gross profit on total sales was down more than 4 percent.

Out-of-area cement purchasing was among the factors which the speaker referred to as contributing to increased costs during the year. Premiums paid for such purchases ranged from 74 cents to over $2.00 per bbl., and over 25 percent of the total cement consumed had to be obtained from out-of-area mills.

Although the company's labor rates have increased, Mr. Jahncke said that the scale is still under that of defense plants in the area, with the result that it is extremely difficult to compete in the labor market for competent workers. White-collar employees have also received the maximum increases allowed by the Salary Stabilization Board, but notwithstanding this the company frequently loses valuable men to local defense plants.

Mr. Jahncke referred specifically to some of the increased costs of materials and supplies which the company has been compelled to absorb during the first year of price control. The price of batteries has risen 9 percent, gasoline 5 percent, machine shop work 15 percent, rubber goods 18 to 35 percent, wire rope 7 percent, and coal 5 percent. Recently purchased trucks cost $677 per unit more than when control went into effect.

His company, Mr. Jahncke said, would be in serious trouble today except for the sizable increase in total volume of business. He expressed grave doubt that future cost increases can be absorbed in this fashion, or that the present sales level can be relied upon indefinitely.

Mr. Jahncke then introduced Walter H. Acheson, director of the building materials branch of the Office of Price Stabilization. As a former director of the National Ready Mixed Concrete Association, and former president of the Wabash Valley Ready Mixed Concrete Association, Mr. Acheson has a thorough understanding of the industry's problems. In his opening remarks he reminded his audience that price controls were established by the Congress under the Defense Production Act of 1950. After reading several paragraphs from a speech by Price Director DiSalle, Mr. Acheson indicated that he would try to answer questions from the floor.

Mr. Jahncke asked what the prospects were for issuance of a tailored regulation covering the ready-mixed-concrete industry. As a preface to his reply, Mr. Acheson explained that the advisory committees for both the sand-and-gravel and ready-mixed-concrete industries had felt that it would be better to have a transportation order issued first, rather than to wait for a tailored regulation to be drafted and approved. Considerable time was therefore spent in the preparation of a transportation order which would have applied to such materials as ready mixed concrete, sand and gravel, concrete products, gypsum, and cement. Approval was sought on the basis that transportation was too important an element of total cost in these industries to be ignored.

The transportation order, Mr. Acheson continued, was prepared and submitted to higher authority for approval. In due course it was returned with a request for data which would justify such relief on the basis of the Johnston earnings standard. The speaker indicated that there was some uncertainty in his mind as to how such data were to be gathered. He pointed out that the building materials branch is understaffed, and that its budget will not permit hiring more help. For this reason, and because a tailored regulation is extremely difficult to prepare, Mr. Acheson felt that is was not possible to predict when such an order will be completed.

John Fisher of Phoenix, Ariz., asked the speaker how long it should take for his branch to process an application under G. O. R. 21. Mr. Acheson replied that his office has received few such applications, and that in the absence of adequate experience he did not feel qualified to estimate the time required to process them.

Mr. Ahearn entered the discussion

*Editor's Note: Complete details of this plan will be covered in an early issue of this magazine.

P. L. Bowlin (sales manager, Universal Atlas Cement Co., New York, N. Y.); J. W. McMichael (McMichael Concrete Co., Tulsa, Okla.); Walt Keeler (Walt Keeler Co., Inc., Wichita, Kans.); and G. S. Neel (western sales manager, Universal Atlas Cement Co., Chicago, Ill.).

M. L. Hurst (vice-president), C. W. Shirey and B. Rodamar (all of C. W. Shirey Co., Waterloo, Iowa); and M. C. Miller (vice-president, Hawkeye-Marquette Cement Co., Des Moines, Iowa).

at this point, expressing the firm belief that any plea such as Mr. DiSalle's that we submit to Price Control for the good of the country, should be accompanied by a responsible effort on the part of the government to properly administer its control program. Producers, Mr. Ahearn said, are certainly entitled to more than a reasonable estimate of the time required to process their application.

Mr. Ahearn expressed considerable sympathy and understanding of the practical problems which exist in the building materials branch of OPS. Within the limit of his discretion, Mr. Ahearn said, Mr. Acheson is doing everything he can to help the industry; however, applications now on hand have already hopelessly bogged down the facilities available for processing them. The speaker expressed the opinion that the Capehart Amendment, so far as the ready-mixed-concrete industry is concerned, is a snare and a delusion. Few if any companies have enough employees to compile the data required, nor are there available enough lawyers who can understand the phraseology of the law. Mr. Ahearn expressed the view that there is not the slightest chance of relief under the present OPS setup, no matter how overwhelming the need becomes. Mr. Acheson stepped to the microphone briefly to express a more optimistic view than Mr. Ahearn's with regard to hope of drafting a tailored regulation. He pointed out that the OPS has objected to the action of the ICC in granting a 9 percent freight increase.

Mr. Ahearn replied that it was cold comfort indeed to know that OPS had opposed the ICC action in view of the fact that it was entirely due to an OPS interpretation that it became possible for one industry to have to bear the brunt of an increase ordered by a public body on another industry. He added that after 12 months of living through frustration and repeated disappointment he feels justified in being pessimistic concerning the outlook. Mr. Ahearn make it plain, however, that his criticism is directed at higher policy-making levels of OPS. He believes that some relief may be hoped for if political pressure is brought to bear against the individuals who hold positions on the policy making level, and he expressed the hope that the ready-mixed-concrete industry would use such power as it has to bring political pressure to bear.

Mr. Ahearn said that he sees no prospect of there ever being any automatic provisions for relief under OPS. The ready-mixed-concrete industry in particular, he said, would always have to face the most exacting stands to obtain any adjustment on an individual basis.

Mr. Ahearn also expressed a word of warning with regard to collective bargaining sessions. He advised his listeners to enter such sessions with a foreknowledge that any increases granted in labor rates will have to be paid out of profits. He expressed fear that producers who bargained collectively on the mistaken premise that increases granted may be defrayed by price increases, will succeed in bargaining themselves straight out of business. In concluding his remarks, Mr. Ahearn advised producers to do all that they could to comply with existing regulations as they understood them. Then, he said, go about the normal routine of operating your business, taking the calculated risk that words mean what they seem to mean.

Merchandising Problems One of the outstanding sessions of the entire ready-mixed convention was a panel discussion of merchandising problems in the industry. At this gathering Robert C. Collins was presiding officer, and the following individuals each presented brief papers bearing on some aspect of the discussion: Quentin W. Best, Consolidated Rock Products Company, Los Angeles, Calif.; John B. Donovan, Valentine Concrete Company, Inc., Springfield, Mass.; Russell P. Mumford, The Beckley & Myers Company, Springfield, Ohio; and M. Eugene Sundt, Albuquerque Gravel Products Company, Albuquerque, N. M. In opening the discussion Mr. Collins reviewed the history of merchandising sessions since their inception some 15 years ago, and he pointed to such outstanding accomplishments as the development of a manual on standard clauses for sales agreements. Mr. Collins's introductory remarks also covered at some length the question of relationships between the cement industry and the ready-mixed concrete industry. He discussed the association's statement of principles dealing with these relationships and the suggestion which the association has advanced for improving the methods of distributing cement during shortages.

Mr. Best discussed the marketing of lightweight aggregates in southern California. He pointed out that the market for lightweight aggregates can be broken down as follows:

1. Concrete masonry and precast sections (incorporating such materials as Rocklite, haydite, cinders, pumice and scoria);
2. Structural steel insulation, roof

fillers, and plasters (incorporating such materials as vermiculite and perlite);

3. Structural grade architectural concrete.

Mr. Best pointed out that these were of the utmost importance to contractors, architects, and engineers in order to sell lightweight concrete. It is of particular importance that complete and accurate information be placed in their hands if they are to make the best possible use of the material. The speaker described two major projects built in Los Angeles in which a total of some 26,000 cu. yd. of lightweight concrete was used and paid for at a premium of $5 to $6 per cu. yd. Notwithstanding the higher price of lightweight concrete, Mr. Best said, a net saving of $180,000 per building was realized due to the conservation of steel in the structures.

Mr. Best stated a series of "do's" and "don't's" in connection with handling lightweight aggregates and handling of concrete.

1. Note the requirements of a job as to the weight per cubic foot of concrete and the strength required.

2. Exercise utmost care in the storage of aggregates in order to avoid contamination.

3. Note physical properties of the material being used.

4. Allow adequate time in the mixers for the dry aggregates to absorb water in order to avoid the flash absorption which sometimes occurs.

5. Work closely with the engineer on the job and with local testing laboratories in determining proper mixing time to meet particular specifications.

Mr. Best stated that his company is now developing standard mix designs for Rocklite concrete. He admitted that while experience had taught the staff a great deal, there was much still to be learned about the handling and production of lightweight concrete. He mentioned that there was one thing in particular that had to be learned the hard way: "Don't always be the low bidder".

Mr. Donovan's paper dealt with the sale and use of admixtures and pointed out that although a great deal is said about the use of admixtures, there has been comparatively little discussion of the problems arising in connection with the sale of such material. While his own company sells waterproofing materials, calcium chloride, lamp black, and similar materials and does not hesitate in recommending their use, Mr. Donovan expressed the belief that a good deal of caution should be observed in connection with selling admixtures. He pointed out not all admixtures necessarily improve the quality of concrete, nor are all such materials capable of performing in the manner indicated by the seller.

In determining which admixture to sell, Mr. Donovan advised that producers avoid accepting the responsibility for the use of any admixture which has not been tested by recognized commercial laboratories. Unless there is clear evidence of the favorable effect on concrete, Mr. Donovan strongly advised ready mix producers to avoid overselling. Among the admixture materials which Mr. Donovan said are most likely to give trouble are air-entraining materials, and great caution should therefore be observed in selection and promotion. He said that waterproofing materials, on the contrary, present few problems. His company uses considerable quantities of lamp black for the production of colored topping and has had a fair amount of trouble with the non-uniformity of color.

In discussing the use of calcium chloride, Mr. Donovan pointed out that it should not be assumed that this material will prevent concrete from freezing. He advised producers to caution all users to employ the same safeguards in handling concrete as though calcium chloride had not been used. In closing his discussion, Mr. Donovan reminded the producers present that most of the admixtures which the ready-mixed concrete industry might have occasion to use have been thoroughly tested in the association's laboratories at the University of Maryland.

Mr. Sundt discussed some of the advertising techniques which are available to the ready-mixed concrete industries. He emphasized that a particular ready-mixed concrete producer has only a relatively small number of potential customers and that for this reason such mass advertising media as radio, television, and daily newspapers are not entirely suitable. He pointed out that if mass-media are employed, there is always a chance that too many trucks of a given fleet will be called out on 3-hour deliveries to sell half-cubic-yard loads.

Where it is deemed desirable to use newspaper ads or radio spot announcements, Mr. Sundt referred to the complete advertising kit prepared by the Portland Cement Association, from which an almost unlimited number of advertisements of various types may be prepared. In undertaking a concerted advertising program, Mr. Sundt believes that any company is well advised to engage the services of a good advertising agency, the only possible exception to this rule being in those few organizations which have one at least employee with a definite flair for advertising. He emphasized that a mediocre advertising program can not be expected to yield results, and that unless the job can be done well, it is almost preferable not to undertake it at all.

Mr. Sundt believes that in the case of ready-mixed concrete selling, the personal advertising approach is the most fruitful one that can be adopted. In the long run he believes that service can and will sell more concrete than even a substantial reduction in price. His own company makes extensive use of various types of advertising novelties in its own selling efforts. Mr. Sundt believes that any organization that bends over backwards in its effort to render a valid service and to treat all customers fairly, will eventually become known far and wide. As a means of appraising the representative of one organization, Mr. Sundt suggested that certain direct questions be asked such as:

1. Are truck drivers courteous out on the streets and highways?

2. Is the company's equipment clean and in good repair?

3. Is the customer unfailingly notified when a promised delivery of material is going to be late?

4. Is the organization too often in the position of having to make excuses for failure to deliver on time?

In Mr. Sundt's opinion the reputation of any well-managed company can depend largely upon the answers to such questions as these.

Mr. Mumford discussed in general terms the development of wider markets for ready-mixed concrete. While the market for ready-mixed concrete is potentially tremendous, Mr. Mumford pointed out that in many respects the material is deficient in glamor and that for this reason flamboyant sales techniques are not likely to be fruitful. Mr. Mumford made the following specific suggestions concerning the use of various advertising media:

1. Make sure that all advertising copy plays some part in acquainting the customer with the advantages of the material you are trying to market.

2. Change newspaper copy frequently.

3. Remember that the constant association of a firm name with the product which is being sold is a

major objective of advertising.

4. Take advantage of county fairs, home shows, and building expositions at every opportunity, since affairs of this type offer a prime opportunity for merchandising ready-mixed concrete.

The speaker mentioned that the preparation and operation of exhibits could only be regarded as hard work, but he believes the work is usually well rewarded. He urged that the maximum use of action and color be made, and he suggested that the entire problem be regarded as a test of ingenuity.

Mr. Mumford believes that anyone who would fully utilize the potentials of merchandising ready-mixed concrete must himself become an expert on the material. He believes that it is well worth while to prepare and present papers concerning one's product wherever there is interest in the subject.

Following the completion of Mr. Mumford's paper, Mr. Collins declared the meeting open for a panel discussion of all phases of the merchandising problem. One of the first questions raised concerned the problem of mixing vermiculite concrete in a transit mix truck without compressing material and losing yield. One producer stated that he had found a substantial loss in yield unless the mixing was carried out rather quickly, and he expressed the opinion that a plaster type mixer is probably the safest for use in producing this type of concrete. Another reply indicated that little loss of yield was experienced where the length of haul was comparatively short. An Ohio producer indicated that the sequence of operations was an important factor to be considered; he stated that his own company experienced no serious loss of yield when water and cement were placed in the mixer first, followed by the addition of the vermiculite and mixing for approximately three minutes *after* reaching the job.

A producer from Oklahoma City asked the general question as to which is the better way to build a ready-mixed-concrete business: sell the product on a guaranteed-strength basis or on a minimum cement content basis. There appeared to be as many opinions on this subject as there were people present. One producer expressed the view that the guaranteed-strength basis of selling is best if competitor companies will sell on the same basis. This individual believes that the practice of selling with a guarantee of strength leads to better control of the product.

Stanton Walker discussed a number of aspects of the general problem of guaranteed-strength selling, and he raised the question of what measures to use for determining whether or not one is producing concrete of the strength guaranteed. There are, Mr. Walker pointed out, a considerable number of variables involved in the operation of determining the strength of concrete, such as the quality of the concrete itself, the method of obtaining a sample, the operation of molding the sample in a cylinder, the handling of the specimen on the job, the method of capping, and finally, the centering of the specimen in the testing machine. Mr. Walker believes that it is not feasible for the producer to guarantee that all specimens will exceed a minimum strength. He believes that all contracts should be permissive of some specimens which fall below the specified guaranteed strength. The whole problem, Mr. Walker said, calls for a considerable amount of sensible give-and-take between the producer and the customer. While he is willing if necessary to operate on a guaranteed-strength basis, Mr. Walker himself definitely prefers a guarantee of minimum cement and maximum water content.

J. F. Flanagan and C. R. McCormick (The Whittemore Co., Boston, Mass.) and Frank Generazio (president, New England Sand and Gravel Co., Framingham, Mass.).

The Oklahoma City producer who touched off this somewhat thorny discussion expressed the opinion that in towns where acceptance of ready-mixed concrete is not fully established guaranteed-strength selling is a good way to develop business. He believes that sooner or later the producer must accept responsibility for the quality of the material he markets and that he must believe in the product himself before he can hope successfully to sell it to others. The panel members themselves appeared to be divided on the question. Mr. Best expressed the opinion that the industry already has enough problems without attempting to market the product on a guaranteed-strength basis. He pointed out that the contractor is always potentially a competitor of the ready-mixed-concrete producer.

Mr. Sundt, on the contrary, feels that the ready-mixed-concrete producer cannot hide behind a cloak; that there must be a valid reason why there is so much difficulty involved in the production of uniform concrete. He reported that his own company has set up safety factors so based upon the theory of probability that at least 90 percent of the cylinders tested on any job will meet the guaranteed strength. Mr. Sundt also expressed the opinion that so long as there is a wide latitude in specifications pertaining to portland cement, it is of utmost importance that the ready-mixed-concrete producer also have considerable latitude.

A representative of the J. L. Shiely Company, St. Paul, Minn., told about his company's experience with guaranteed cement in selling during the last nine months. He disclosed the somewhat unusual practice of running a Burmeister air test on each carload of cement and of finding air content ranging from as little as 4 percent to as much as 14 percent. He expressed the view that air content of cement may well be an important factor in the uniformity of concrete. This same individual called attention to the fact that selling concrete on the basis of guaranteed strength is in effect executing a guarantee of work to be done by someone else, and he seriously questioned whether or not this would be regarded as good business.

Alexander Foster Jr., of the Warner Company, Philadelphia, summarized briefly some of the things which his company has done in its effort to produce uniformly high-quality concrete. In so far as possible, Mr. Foster said, the Warner Company's plants produce concrete on a prescription basis wherein a minimum cement content of "X" is specified along with the maximum water content of "Y", and within certain limits actual weight of materials is specified. He told of using an English-made device in determining the moisture content of sand at the various plants. This device, which Mr. Foster unfortunately was unable to identify by name, makes it possible to predict the slump value of concrete within very narrow limits.

Stanton Walker, who was introduced by the chairman of the meeting as "old-man concrete himself", endeavored to summarize the prob-

lem of guaranteed-strength selling. He said that there is a great deal of misunderstanding of the strength problem in connection with concrete, and that he believes that selling on the basis of guaranteed strength must inevitably be regarded as a contractual obligation. In Mr. Walker's opinion any such contractual obligation should make allowances for inherent variations in the materials themselves and in the testing methods which may be employed to determine incompliance with the contract. Similarly, Mr. Walker feels that so-called prescription concrete should provide some latitude, although he agreed that slump is often an extremely sensitive measure of the quality of concrete.

Admixtures For Concrete In his paper on *Admixtures for Concrete*, D. L. Bloem, assistant director of engineering of N.R.M.C.A., described the various types of concrete admixtures with regard to their effects on concrete and the desirability of their use. He also gave a brief review of tests of admixtures, including fly ash, made at the Association's laboratories. Admixtures for concrete, said Mr. Bloem, go far back into history. They are used for improving workability and plasticity, for waterproofing, for improving quality, etc. When first introduced many years ago, admixtures gave much trouble, and the results obtained with them varied so widely that all admixtures fell into disrepute for some years. They have come back into popularity in recent years because of their obvious advantages, and most of those on the market have been thoroughly tested and are generally accepted.

Air-entraining admixtures, said Mr. Bloem, are used primarily to increase the durability of concrete and also to impart increased resistance to freezing and thawing. Additional advantages are that they improve workability, reduce segregation, and make possible reduction in the amount of mixing water required. Their only disadvantage, he said, is a probable reduction in strength. He used slides to show that air entrainment, when properly controlled, imparts increased resistance to freezing and thawing, but that when used with poor aggregates, it will not necessarily bring the strength up to that of a concrete made with good aggregates and standard portland cement. The slides also showed that the loss in compressive strength due to air entrainment was least in the leaner mixes. He stated that all the five different types of admixtures tested greatly increased the resistance to freezing and thawing of concrete and that most of them attained over 90 percent of the final compressive strength of normal concrete, some actually exceeding it.

The use of accelerating admixtures which speed up the development of strength in concrete, according to Mr. Bloem, offers special advantages in cold weather, but he warned that no such product is an anti-freeze. The normal amount of calcium chloride used in concrete, for example, will lower the freezing temperature from 2 to 3 deg. F.

In discussing admixtures which impart acid-alkali resistance to concrete — pozzolanic materials — Mr. Bloem said that fly ash can be substituted for cement without loss of strength, but that the amount which can be safely used varies with the source. Each fly ash, he said, is an individual material with individual characteristics and must be considered as such. The association laboratory has tested three different ones and found that they varied considerably, but they all affected strength in a similar manner. At the end of 7 days there was a considerable loss of strength, which became less at 14 days, and at the end of 28 days and 3 months there was very little difference from normal concrete. The amount of strength loss generally increased with the amount of fly ash used, but the resistance to freezing and thawing also increased. In all the tests fly ash replaced cement, weight for weight, and a drying period was used in the curing cycle. Mr. Bloem mentioned that the A.S.T.M. is working on a specification for fly ash.

In discussing admixtures for increasing plasticity and workability—ground limestone, diatomaceous earth, etc.—Mr. Bloem said that these are especially advantageous in lean concrete or in cases where the sand is deficient in fines. Such admixtures impart excellent finishing characteristics to concrete. Retarders, said Mr. Bloem, are used to hold down flash set, especially in hot weather, but they reduce strength very little, and there is considerable variation in the results obtained. He also mentioned admixtures which reduce shrinkage and heat of hydration but said that these are seldom used in ready-mixed concrete. In answer to questions, he said that interground admixtures are less trouble than those added at the plant but that the amount, being fixed in advance, can be increased if necessary but not decreased. It developed that some producers prefer to add at the plant, but most of them use whatever the customer specifies.

Safety Contest At the last meeting of this convention the presentations of PIT AND QUARRY trophies were made to the winners of the N.R.M.C.A. Safety Contest, and certificates were awarded to others who had perfect records. The awards were presented by Robert S. Mitchell (Consolidated Rock Products Co., Los Angeles), who briefly reviewed the aims and rules of the contest and urged all members to enter it.

Vincent P. Ahearn also made a brief address in which he said that, although participation in the contest increases every year, the goal is still 100 percent participation by members. He pointed out that no detailed records are required. He asked all member companies to fill out and return the forms they will receive after July 1. Mr. Ahearn emphasized the importance of safety to ready-mix producers and said that the safe company is most likely to survive.

The trophy for the winner in Class A—100,000 cu. yd. per year or more—was won by the W. E. Anderson Sons Co., Columbus, Ohio, and was accepted by Norbert Eckert, safety director for the company. The Class B award—for producers of 50,001 to 100,000 cu. yd.—was accepted for the Eugene Sand & Gravel Co., Eugene, Oreg., by L. H. Williams of that company. The Class C award—for producers of 50,000 cu. yd. or less—was won by the Standard Roofing & Material Co., Tulsa, Okla. In this contest there were 37 other companies which also had perfect safety records; these received special certificates.

Armour Research Announces Promotion of Albert Litvin

Albert Litvin, structural engineer, has been named supervisor of the masonry materials section, ceramics and minerals research department, Armour Research Foundation of Illinois Institute of Technology. In his new capacity, Mr. Litvin will guide the activities of scientists and engineers doing research in lightweight aggregates and concrete.

He came to the foundation in September, 1950, after serving with the National Bureau of Standards, Washington, D.C., since 1941. While with the Bureau, he supervised the cement testing laboratories in Washington and was responsible for testing the cement for many large government projects.

Mr. Litvin is a member of the American Concrete Institute and a co-author of articles dealing with the effect of air-entraining admixtures on the durability of concrete.

30-Year-Old Pipe Plant At North Little Rock Still Going Strong

Basically sound plant layout stands owners in good stead

• Drew H. Lander, secretary-treasurer of the Shearman Concrete Pipe Company, North Little Rock, Ark., and his father, R. S. Lander, president. Mr. Lander Sr. is a past president of the American Concrete Pipe Association.

Weather ON THE SPOT report

ALTHOUGH in general this publication believes in and endorses the principle that maximum plant efficiency can be achieved only through the widest possible use of modern techniques of mechanization, we are well aware that many plant operators in the industries we cover do outstandingly good jobs without

By WILLIAM M. AVERY

fully mechanizing their processes. A case in point is the Shearman Concrete Pipe Company's plant at North Little Rock, Ark., which we had occasion to visit some months ago.

The plant was built in 1920, long before elevated storage and gravity handling of materials had become accepted practices. Due primarily to the basic soundness of the plant layout, the owners have been able to operate successfully and profitably for over 30 years without making any major change in the materials-handling setup.

The plant building itself was built over an elevated rail siding which divides the structure into two sections. Bulk materials drop from incoming cars into various floor-level pockets which are adjacent to the several mixing and molding operations, and the transfer of the materials is handled by means of wheelbarrows. The storage system will accommodate close to 50 carloads of material. To assure accurate and uniform batching, each wheelbarrow load is carefully weighed on one of several conveniently-located platform scales before it is wheeled to the mixer.

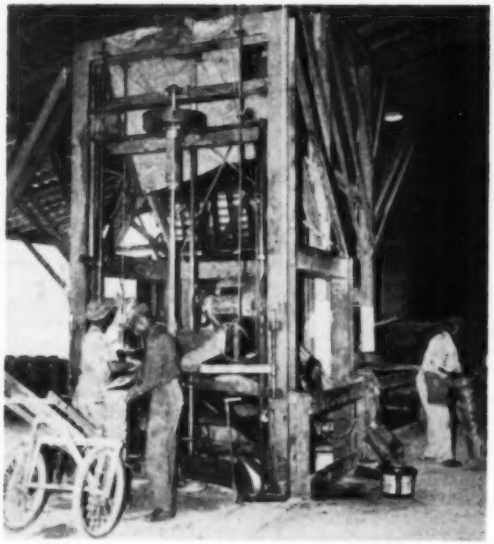
Including the curing rooms, the plant proper comprises approximately 40,000 sq. ft. of roofed area, providing ample space for several simultaneous molding operations without traffic interference or crowding. The main production unit is a modern packerhead machine which was built and installed in 1950. It is used to produce pipe ranging from 4 to 18 in. in diameter. Three older tamp machines are also available for making pipe up to 60 in. in diameter. Larger units are produced in a separate department by the casting method. Under normal conditions only the packerhead and one of the tamp machines are operated simultaneously.

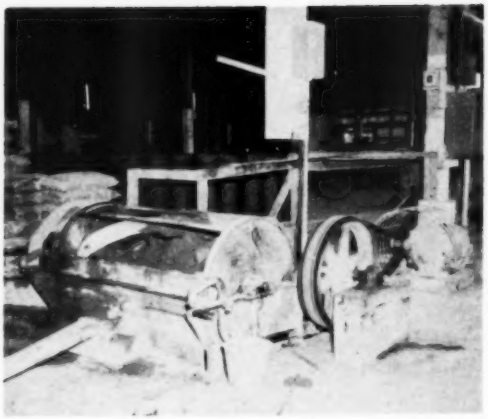
The various production units in the plant are served by 18-cu. ft. Dodson batch mixers, these units being mounted at floor level and discharging into pits from which the concrete is conveyed to the machines. Sand and gravel is used almost exclusively in the mixes, but the company has recently been experimenting with the addition of small amounts of minus 200-mesh pulverized granite as a replacement for a portion of the portland cement requirement. This fine material appears to act in somewhat the same way as would a comparable addition of fly ash, but the practice is still regarded as experimental. Sand is supplied from local sources, as is the pulverized granite, but all gravel used in the operation is shipped in by rail from Newport, Ark.

Bagged cement is delivered to the plant in boxcars which are shunted onto the elevated track which extends into the building. The cars are spotted adjacent to storage piles from which the various mixers are served. There is sufficient elevation to permit sliding the bags on smooth planks extending from the car doors to the storage piles. The company plans to install a complete bulk-cement-handling system in connection with its next expansion program.

The output of the tamp machines is cured in closed rooms by a heat and vapor process, whereas the packerhead units are merely stored and sprinkled in an open portion of the main building adjacent to the machine. There are 11 curing rooms in all (7 on one side of the storage track and 4 on the other side) to serve the three tamp machines. The

A general view of the Shearman plant at North Little Rock. The company also operates a similar plant at Fort Smith, Ark.





A view of the 18-cu. ft. batch mixer which serves the packerhead machine.

Left: The packerhead pipe machine which the company built and installed in 1950. This machine is used to produce pipe ranging from 4 to 18 in. in diameter.

Incoming materials are discharged from an elevated track, located in the center of the plant, into storage pockets below.

Aggregates are carefully weighed on platform scales before they are wheeled to the mixers.

process involves the application of heat and vapor produced by gas-fired unit heaters.

Sewer and culvert pipe account for the bulk of the plant's production, and total output in an average year runs approximately 10,000 tons. In past years the company engaged actively in cast stone production and in the manufacture of roof and floor slabs as a means of keeping its crew together during slack periods, but for some time now the pipe business has provided full-time year-around employment. A small building which adjoins the main structure is still used for making right-of-way markers for the highway department and meter boxes for Little Rock and neighboring cities.

Two Hyster power lift trucks, a "75" and a "20", are used for moving pipe to the storage yard, where an inventory of 4,000 to 5,000 tons is maintained at all times. The company owns and operates five flat-bed trucks for making deliveries. The 8-acre property is served by the Rock Island, the Missouri Pacific, and the Cotton Belt railroads, but practically all deliveries are handled by trucks.

R. S. Lander, now president of the company, was employed by the original owners when the North Little Rock venture was launched, and he was personally responsible for the design and construction of the plant. In 1926 he purchased the controlling interest and incorporated the business under the original name. Operations were gradually expanded to include plants located in Dallas, Shreveport, Oklahoma City, Tulsa, and finally (in 1941) Fort Smith, Ark. The Dallas, Oklahoma City,

Quality Concrete Short Course Covers 3 Groups in Industry

THE Georgia Institute of Technology (Georgia Tech), Atlanta, Ga., conducted a most informative Quality Concrete Short Course on February 4-6, 1952, with over 205 registrants. Last year Georgia Tech held a short course on plastic concrete, but due to requests from concrete masonry and concrete pipe manufacturers for information on their problems, the short course this year was expanded to include all three groups.

Sessions were opened by Robert E. Steimke, director, School of Engineering, who presided as chairman. Col. Blake R. Van Leer, president of Georgia Tech, greeted the assembled "students" and described the various buildings and facilities of the school designed to meet the engineering needs of the Southeast. He urged young men of today to study engineering, since industry, as well as the armed forces, need technically trained men. Industry will have to get along with men over the age of 26 for the next few years, he said, as most college graduates are either entering military service or have had military service at graduation time.

Laboratory research has taken concrete from a hit-or-miss proposition to a material whose qualities we can predict, said William E. Mitchell, chairman of the board of trustees, Georgia Tech Research Institute. He described the fine laboratories and research staff which make Georgia Tech an excellent place for solving industry's technical problems. Mr. Mitchell, long associated with the power and light industry in the Southeast, said that "concrete has made possible the building of hydro-electrical power dams, thus permitting the transmission of power to the industrial center".

H. C. Millkey, American Institute of Architects, Atlanta.

Burton J. Bell, Chief of the Technical Information Branch, U. S. Corps of Engineers, Atlanta, spoke on *Quality Concrete as Required by the Engineer*. He discussed the military needs of today which depend a great deal on concrete. Concrete block walls have given the Corps of Engineers some trouble in the past, but their engineers have revised their specifications in the hope of eliminating this problem.

H. C. Millkey, president of the Atlanta chapter of American Institute of Architects, next presented the requirements of an architect regarding building materials: good physical and aesthetic properties, availability of material, ability of local contractor, economics of material, and public acceptance.

The speaker proceeded to "blow the lid off the meeting" by giving his frank opinion regarding concrete block available in the Atlanta area. He claimed that local block fulfills only three of the above requirements, namely: structural fitness, availabilty, and low cost. The fact that it is low in cost is the reason why it is used in the cheapest types of building and by builders having no knowledge regarding proper concrete block construction or pleasing building design. He added that the public acceptance of concrete block is slowed down after people have seen these cheap structures. An architect in that area, desiring to use concrete block, must fight his client's opposition to the material.

Mr. Millkey believes that if a concrete masonry manufacturer would produce a uniform block, well cured, of good texture, with many sizes and shapes, and with perhaps some color, architects would flock to him and he would have a tremendous amount of business. He cited Frank Lloyd Wright as having designed and built beautiful structures with high-grade concrete masonry.

At this point the short course was divided into two sections. Section 1 concerned itself with plastic mixes and the principles of quality concrete mix design, with actual laboratory work in testing and trial batches, and in placing and finish-

Carl A. Menzel, P.C.A., Chicago, Ill.

S. H. Westby, P.C.A., Chicago, Ill.

ing concrete for floors, highways, and streets. Section 2 dealt with the principles of quality concrete mix

R. E. Copeland, N.C.M.A. director of engineering.

design for block and pipe construction, and included curing, drying, testing, and design and construction of masonry buildings.

R. E. Copeland, director of engineering for the National Concrete Masonry Association, opened Section 2 with a discussion on specifications. Specifications, he said, should be stringent to accomplish the purposes for which they are intended, but should not be so strict that they can't be followed. Specifications should be technically ideal and also practical. He explained that specifications are the result of extensive work done by committees which include representatives of nearly all the allied fields. No matter how good a specification is, it is no better than its enforcement. If some concrete masonry manufacturers are lax in meeting specifications, it can usually be traced back to the indifferent attitude of architects and builders.

Testing of Materials for Plant Use was next explained by S. R. Millhouse, technical service manager of Universal Atlas Cement Company, Birmingham, Ala. As a means of controlling the quality of concrete masonry units, manufacturers were urged to check the gradation of their aggregates by systematic screening of the aggregates into the various screen sizes and then determining the fineness modulus. Mr. Millhouse explained on a blackboard the calculations necessary in finding the fineness modulus and also how the specific gravity of aggregates is determined.

Carl A. Menzel, manager of the Housing and Cement Products Bureau of the Portland Cement Association, Chicago, next spoke on *Principles of Mix Design*. He stressed the need for repeated checks on materials and careful control of manufacturing procedures in order to produce a quality product. If a manufacturer had no controls whatever on his operations, Mr. Menzel pointed out, he would not know where to begin if he wanted to improve his product. From tests he had made, Mr. Menzel explained how the maximum strength in block, for any given combination of cement to total aggregate, can usually be secured by obtaining the maximum total weight of the aggregate in the block.

The following data taken from one of Mr. Menzel's slides shows suggested ranges in trial mixes for various types of aggregates. The proportions are in the relation of cement to total aggregate.

Suggested Range in Trial Mixes		
Sand and gravel	1:8	1:12
Limestone	1:7	1:12
Expanded shales	1:6	1:9
Cinders	1:6	1:8
Expanded slag	1:5	1:7
Pumice	1:4	1:6

Harry McDonald, service engineer for the Pennsylvania-Dixie Cement Corp., Atlanta, conducted a discussion of mix design and a workshop in the preparation of trial batches. In many cases, he said, the type of machine governs the mix we use. He also emphasized the point brought out by previous speakers that a products manufacturer must have plant control of his mixes; otherwise, he will not know what he is doing or where to make necessary changes to improve the quality of his product.

Mr. McDonald led the entire group through a step-by-step procedure in determining a trial mix. The group watched as this trial mix was prepared in a mixer and molded on a block machine. The F. C. George Machine Co. of Orlando, Fla., had loaned one of its new block machines, mounted on a truck, for this short course. Adjustments in the mix were made as desired.

Curing and Drying was next discussed by Mr. Menzel. He stated that hydration of cement is a chemical reaction and requires time, favorable temperature, and continued presence of moisture. When curing operations are accelerated, something is sacrificed, such as strength and durability. High-pressure steam curing is one of the best methods of curing concrete. In 12 hours, Mr. Menzel stated, a concrete block can be completely cured both in strength and moisture content. With the additional process of vacuum drying, as now employed in some plants, the blocks are ready for immediate shipment. By means of slides, Mr. Menzel demonstrated that the way to stop shrinkage cracking is to dry the block adequately.

Mr. Copeland gave a report on *Recent Test Results on Curing* which his association has conducted. Tests were made on low-pressure steam curing at various products plants and not in the laboratory to determine critical holding temperature, critical holding period, critical steaming period, and critical soaking period. Based on these tests the following cycles were advocated:

Maximum temperature, 165 to 175 deg. F. Holding period, 2 hours. Steam on period, about 4 hours, but not less than 3 hours. Rate of temperature rise in kiln not exceeding 60 deg. F. per hour. Soaking period, 8-hour minimum.

Where it is necessary to dry the units artificially down to 40 or 30 percent moisture content, Mr. Copeland said it can be safely done if the block are well cured. For lack of more data, he does not recommend drying in temperatures over 240 deg. F., although experiments are now being conducted at temperatures ranging between 400 and 500 deg. F.

S. H. Westby, assistant manager of the Housing and Cement Products Bureau of the Portland Cement Association, Chicago, next spoke on *Concrete Masonry Wall Design*. He stressed that concrete masonry manufacturers not only make block, but they also are in the business to market concrete masonry walls. Too many architects and builders who design and build with concrete masonry are still using the principles and methods developed for clay products. Concrete products manufacturers should, therefore, acquaint themselves with the proper use of concrete masonry, so that they in turn can inform architects and builders in order to attain best results.

Most building materials, when wet, are in an expanded condition and shrink upon drying out. It was urged that strict observance of moisture content limitations be observed in using concrete masonry.

In preparing plans for a concrete masonry building, architects were urged to design the length of walls and the locations and widths of wall openings in multiples of half-length units. With block 16 inches in length, *all* horizontal dimensions should be in multiples of 8 inches. Vertical dimensions should be in multiples of full height units. By using such dimensions, costly cutting and fitting on the job by the mason

is minimized, and the masonry pattern is preserved.

With the aid of slides, Mr. Westby explained further design details which should be observed when building with concrete masonry.

Construction Practices was the topic next discussed by D. L. Chaney, regional structural engineer, Portland Cement Association, Atlanta. He illustrated several faulty design and construction practices that usually result in cracks in the masonry. He urged that insulation be placed on top of roof slabs to minimize movements in the roof which are transmitted to the walls. He advised the use of control joints at 20- to 25-ft. intervals and at the intersections of masonry walls and at columns.

Mr. Westby, in discussing *Details of Construction*, stressed the importance of keeping the block dry on the job site and until they get into the wall. When block are delivered on the job, they should be stockpiled on boards or on other supports, so that they do not come in contact with the ground. Coverings of tarpaulins or building paper should protect the stockpiled block from rain or snow. Pre-wetting of units just prior to laying, a custom used with clay brick, must never be done with concrete masonry; the block must be kept dry. At the end of a day's work the top of the unfinished wall should be covered with a board or building paper to keep rain or snow from entering the hollow core spaces.

W. E. Scott, service engineer for the Florida Cement Division, General Portland Cement Company, Tampa, discussed *Architectural Treatment of Masonry Walls*. By means of slides he showed how concrete masonry can be made into many sizes and shapes to lend architectural treatment to almost any type of architecture desired. The use of slump block and split block was also demonstrated.

The Short Course closed with an afternoon session on the *Design and Construction of Drainage Systems*.

J. G. Hendrickson Jr., director of engineering for the American Concrete Pipe Association, Chicago, discussed the various specifications relating to concrete pipe and some of the committee work now in progress.

C. E. Drummond Jr., consulting engineer with Wiedeman and Singleton, Atlanta, described some of the problems facing the engineer in the design and construction of sewer systems. He displayed and explained a design table which his firm uses in determining the loads on a sewer.

E. C. Wenger, manager of the

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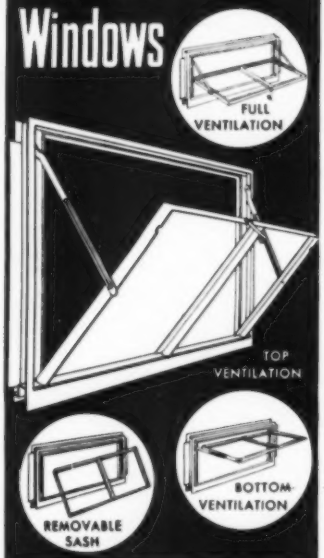

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Conservation Bureau, P. C. A., Chicago, discussed loads on sewers. He explained the effect of loads on trench type and projection type sewers and went through a typical design problem.

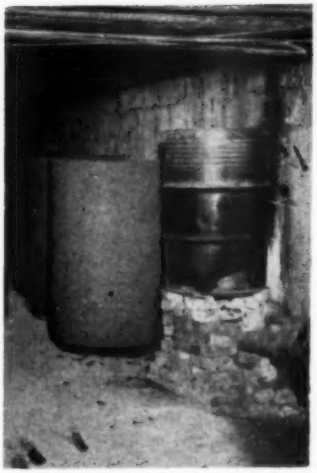
The session closed with a movie prepared at Iowa State College which illustrated Marston's formulas. Small working models in the movie clearly illustrated the effect of various loadings and trench conditions on the sewer pipe. The effect of various conditions affecting the rate of discharge from a sewer were also clearly demonstrated.

Shearman Concrete Pipe

(*From page 230*)

and Tulsa properties were sold in 1950, and the Shreveport plant has been leased to another concern; so at present the company actively operates only at North Little Rock and Fort Smith. Production at the Fort Smith plant runs approximately 7,000 tons per year.

From 20 to 30 men are employed in the company's operations at North Little Rock, and about 15 are employed at Fort Smith. Officers of the company, in addition to Mr. Lander, are D. T. Suddreth, vice-president, and Drew H. Lander, secretary-treasurer. David Suddreth is plant superintendent.



A view of the kilns in which tamped pipe is cured. The unit at the right is a gas-fired vaporizer.

NEW MACHINERY and SUPPLIES

• Flexible Mixer Design

A flexible design in truck mixers has been announced by the Jaeger Machine Company, Columbus, O. The design uses a basic machine that consists of drum, frame, front trunnion, drum roller assemblies, and fast charging and discharging drum construction.

Termed the "Mix Plus" unit, the new machine is said to hold the maximum volume of material that may be carried. The basic unit includes a catwalk, mudguards, and a 3-piece "Swing-Away" chute; the buyer may choose any of the equipment items that suit particular needs. End assemblies include open-end type loader with controlled discharge gate, end loader with seal for agitator or dry-batch use, removable top door, and sealed discharge door for agitator service with wet mix. There is a choice of Continental engine, Chrysler engine with fluid drive, or power take-off adapter, and several types of transmissions.

The Mix Plus may be selected without water system, with two-compartment tank

yes, you can preserve your capital . . .

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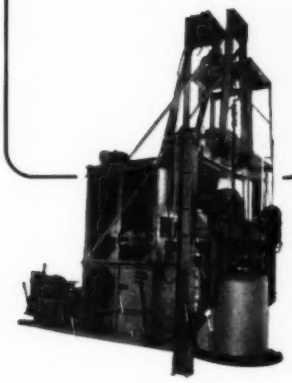

★ You needn't lay out the purchase price to begin enjoying the production and profits of this great machine. Leasing arrangements are possible on terms that assure profitable operation. The Universal Pipe Machine has set new higher standards for efficiency. It makes more pipe and better pipe with fewer man hours. Because it true-tamps at the incredible rate of 680 strokes-a-minute, you use a drier mix, get stronger pipe that handles with less damage, requires minimum curing. One of the four sizes (5"-24", 6"-48", 12"-60", 24"-72") will meet your requirements. Ask about the *Universal Lease Plan.*

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equipped with automatic or sight gauge measuring, or with a single flush tank. Water-carrying units may be equipped with high-pressure water injection system or washout hose or both.

These choices are said to make the basic machine readily adaptable to meet any conditions that occur in selecting truck mixers.

● 3½-Yard Mixer

A 3½-cu. yd. mixer has been added to the "Challenge" line of concrete mixers, which are now made in 3-, 3½-, 4-, 5-, 6-, 6½-cu. yd. sizes according to N.R.M.C.A. rating.

The 3½-yd. Challenge is designed to handle a full 3½ cu. yd. of specification

concrete on a two-axle truck. Challenge mixers are manufactured by Cook Bros. Equipment Company, 1815 North Broadway, Los Angeles 31, Calif.

● Platform Adapter

An adapter that converts a fork lift truck into a platform truck has been developed by the Towmotor Corporation, 1226 E. 152 street, Cleveland 10, O.

The device, which is designed for use on Towmotor Model "W" lift trucks, folds up and latches out of the way when not needed. When in use, it is 7 in. high in the low position and 11 in. in the raised position of the forks. The adapter makes possible the handling of a wide range of other materials on the truck, in addition to pallets.

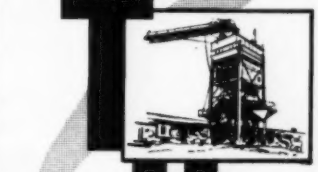
● Truck Mixers

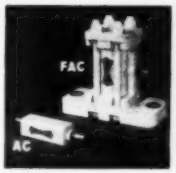
Two new sizes of truck mixers, 5½-cu. yd. and 7-cu. yd., are being offered by the Chain Belt Company, 1600 W. Bruce Street, Milwaukee 4, Wis. These Rex "Hi-Discharge Moto-Mixers" include several new features such as scientific designing by electronic strain gauge tests, drive and transmission under the drum in the rear, water tank over the cab, and end loading without spillage. The machine can be mounted on any make of truck.

Optional equipment includes closed end door, combination hopper and door seal, recirculating blade, drum guards, fenders, spout extensions, hose, gas tank, and water system of double compartment or flush tank type.

Reardon Industries, 2837 Stanton Avenue, Cincinnati 6, O., has published a file of technical data on their products in a catalog form. Concrete chemicals, colors, and treating materials are so covered that specifications of architects and engineers can be met by quick reference to the book.

STUCK





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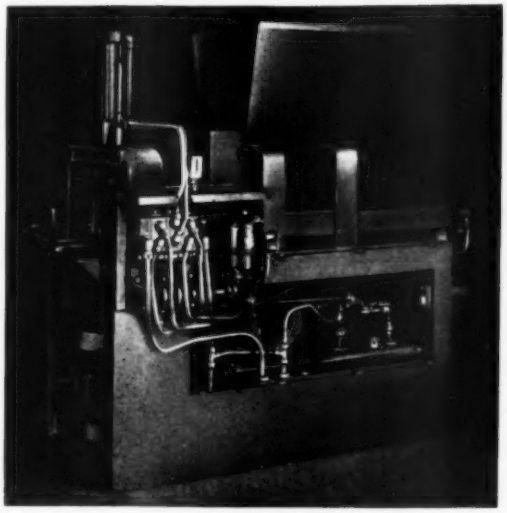

Cover plates removed to show hydraulic mechanism.

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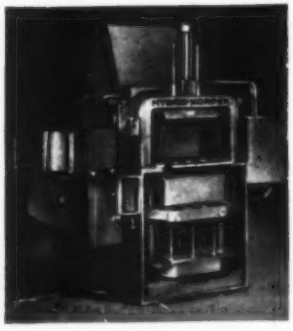

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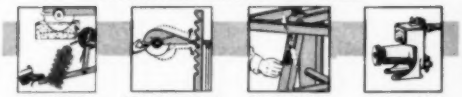

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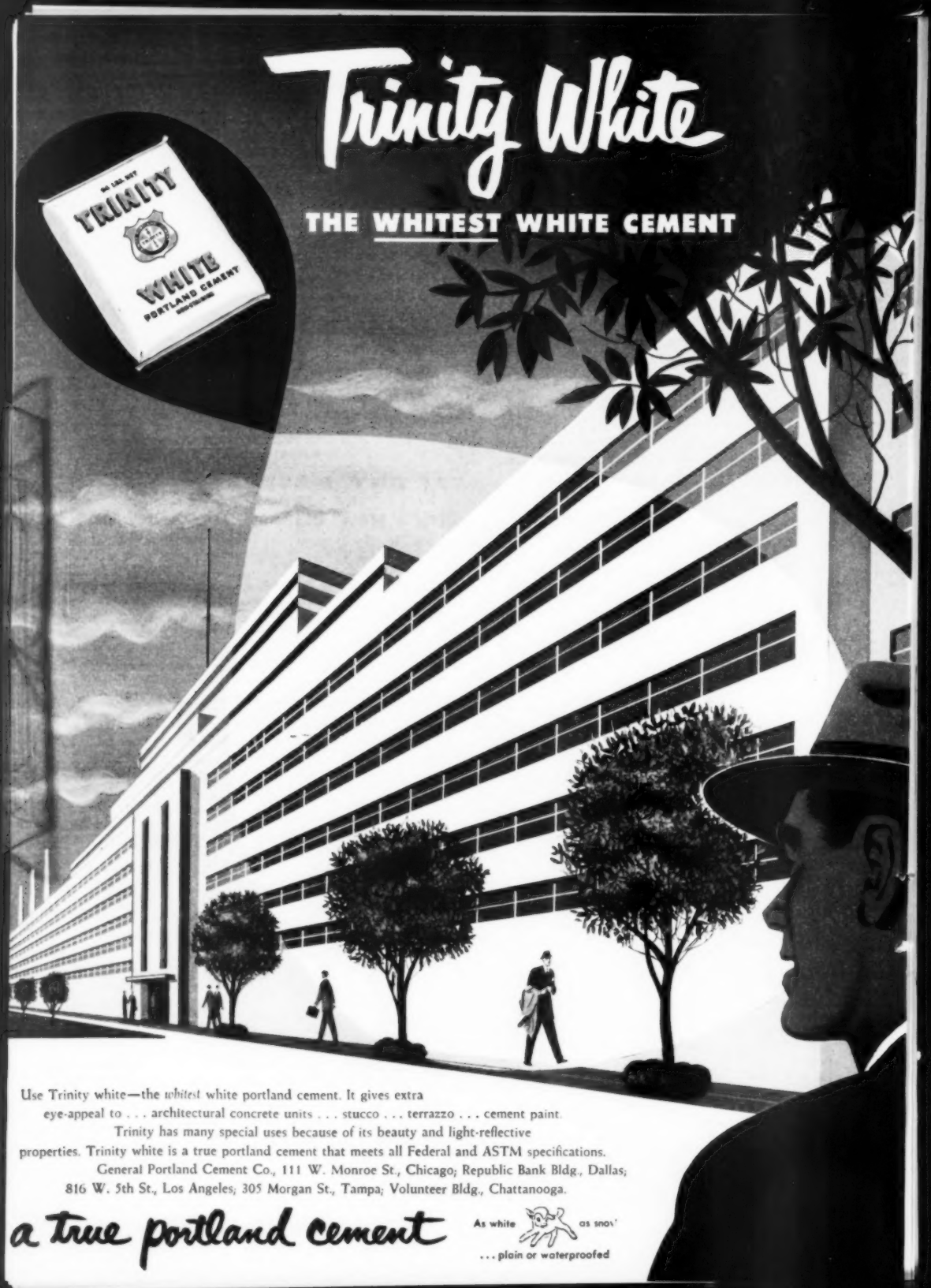
SOLD ONLY DIRECT FROM FACTORY



Use Trinity white—the *whitest* white portland cement. It gives extra eye-appeal to . . . architectural concrete units . . . stucco . . . terrazzo . . . cement paint. Trinity has many special uses because of its beauty and light-reflective properties. Trinity white is a true portland cement that meets all Federal and ASTM specifications.

General Portland Cement Co., 111 W. Monroe St., Chicago; Republic Bank Bldg., Dallas; 816 W. 5th St., Los Angeles; 305 Morgan St., Tampa; Volunteer Bldg., Chattanooga.

a true portland cement

As white as snow

. . . plain or waterproofed

PRODUCTION TESTED!

Blockmaster #3

High Production · Fully Automatic · Hydraulically Powered

The Multico Blockmaster No. 3 is now ready for *your* plant—after three years of production testing in many plants. Producing three blocks per cycle, it is a completely automatic machine, requiring labor only to off-bear block. Hydraulic power from a separate unit provides smooth, quiet operation and serves additional machines in future expansion. The compression action combines pressure, vibration, and tamping, for perfect blocks. Plain pallets are used in making any size or style of block with any aggregate.

Both the Blockmaster No. 3 and the newly modified No. 2 have 50% less moving parts than any other machine in their capacity classes. This means an absolute minimum of maintenance.

Make this proven Blockmaster No. 3 your next machine; call or write for further information.

Multiplex Machinery Corporation has been making concrete production machinery for over 40 years. Our engineers will help you plan your plant expansion. We can show you how Multiplex automatic block machines, mixers, skip hoists, and compartment aggregate bins can make your operations more profitable.

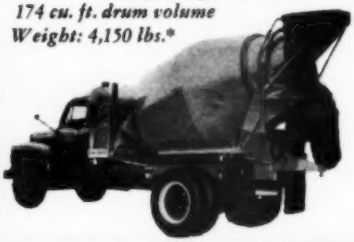
MULTIPLEX MACHINERY CORPORATION

ELMORE • OHIO

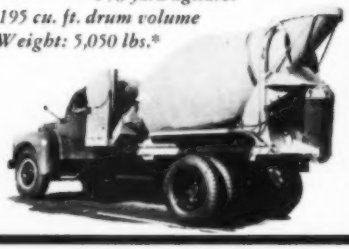
only CHALLENGE (Member NRMCA) offers 6 SIZES

3 YARD MIXER
3¼ yard agitator
153 cu. ft. drum volume
*Weight: 4,010 lbs.**

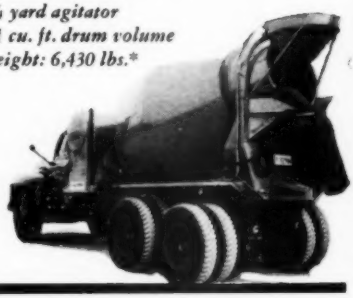
3½ YARD MIXER
4¼ yard agitator
174 cu. ft. drum volume
*Weight: 4,150 lbs.**



4 YARD MIXER
5⅛ yard agitator
195 cu. ft. drum volume
*Weight: 5,050 lbs.**

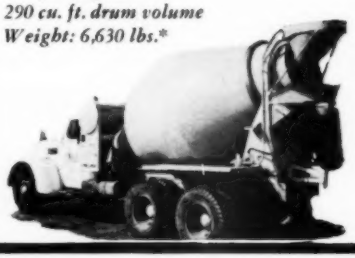


5 YARD MIXER
6¼ yard agitator
241 cu. ft. drum volume
*Weight: 6,430 lbs.**



6½ YARD MIXER
8 yard agitator
313 cu. ft. drum volume
*Weight: 7,000 lbs.**

6 YARD MIXER
7¼ yard agitator
290 cu. ft. drum volume
*Weight: 6,630 lbs.**



Take Full Advantage Of BOTH The PHYSICAL And LEGAL Capacity Of Your Truck

Challenge...the most complete line of truck mixers on the market, provides the greatest possible flexibility in fitting a mixer and truck together to legally haul a full, rated-capacity payload of specification concrete. There's no need to settle for a 4½ yard mixer when your truck is capable of carrying a Challenge 5 yard mixer; nor a 3 yard mixer when it can easily handle a Challenge 3½ yard mixer...*and do it legally!*

A careful analysis of the weight laws of your state will enable you to select the size Challenge that operates most efficiently and economically on your truck...a size that will enable you to "CASH-IN" with greater profit on your investment.

M-36...a 145" wheelbase, two-axle truck with 4 cu. yd. Challenge Mixer... legal with 4 yards of concrete in most states.

M-310...A 163" wheelbase, three-axle truck with 6 cu. yd. Challenge Mixer... legal with 6 yards of concrete in many states.

COOK BROS. EQUIPMENT CO.

Please send complete information on the 1952 Challenge Mixers, together with the name and address of my nearest Challenge Dealer.

NAME_____

COMPANY_____

ADDRESS_____

CITY_____ STATE_____

COOK BROS. TRUCK EQUIPMENT

COOK BROS. EQUIPMENT COMPANY

1815 No. Broadway, CApitol 2-9111
Los Angeles 31, California

Exclusive National Distributors for CHALLENGE, the modern, streamlined truck mixer

*Above weights are typical scale weights and are subject to minor variation only.

LITH-I-BLOCK *PRODUCE BETTER BLOCK- FASTER - AT LOWER COST*

CONCRETE
KENNETH A. SCHULTZ
PRODUCTS

NORTH BURLINGTON ROAD — BOX 682 · DIAL 23-212

CONCRETE BUILDING BLOCKS
SEPTIC TANKS
TILE FOOTS
CHIMNEY BLOCKS
SIDEWALK BLOCKS

WELL CURBING
CEMENT PAINTS
WINDOW SASH
REINFORCING STEEL
EQUIPMENT RENTALS

MINOT — NORTH DAKOTA

December 7, 1951

Lith-I-Bar Company
Holland
Michigan

Gentlemen:

You will probably be interested in the production record of my second Lith-I-Block machine installed this spring.

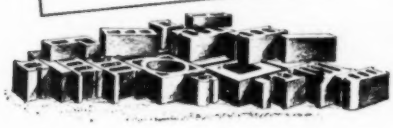
I am pleased to say that the machine has consistantly operated above your advertised production figures of 480 eight inch units per hour. Our average is 540 units and we have made as many as 640 eight inch units per hour.

High production and low maintainance combined with a superior product have reduced wasted labor hours and cull blocks to a point where we are confident we can compete with any producer in the concrete products field.

Yours very truly,

Kenneth A. Schultz

The Proven Leader In Plants From Coast To Coast. If you want to increase production, lower labor costs and improve the quality of your block . . . this is it. Lith-I-Block machines, in both 2 and 3 block models, have consistently produced more than rated capacity day after day in leading plants from coast to coast without costly down-time. Lith-I-Block users report amazingly small labor costs . . . lower than anything they have ever known. And Lith-I-Block quality is visibly better . . . the kind of superior block that builds sales ***fast.***



WRITE FOR THE LITH-I-BLOCK STORY AND THE NAMES OF NEARBY LITH-I-BLOCK PRODUCERS TODAY!

LITH-I-BAR COMPANY

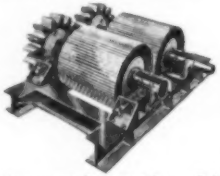
Concrete Manufacturer Classified Section

Advertising Rate Per Issue: $10.00 a Column Inch. Lower Rates on a Contract Basis — Write for Rate Card.

CRUSHERS - VIBRATING SCREENS CONVEYORS - SCALES - FEEDERS - IDLERS

GUARANTEED EQUIPMENT — IMMEDIATE SHIPMENT

CINDER, PUMICE, PERLITE CRUSHERS



10 to 20 tons per hour capacity....$ 431.00
25 to 50 tons per hour capacity.... 1029.00
Complete with hopper

HEAVY DUTY PLATE AND PAN FEEDERS

Complete with motor and drive.
Priced from $381.00

CONVEYORS & CONVEYOR PARTS

Troughing idler conveyors. Any length, belt widths to 60".
Prices from $392.00

Flat belt type bulk material conveyors. Any length, belt widths to 48".
Prices from $653.00

BUILD YOUR OWN CONVEYORS

We have standard sections, head and tail pulleys, take-ups, drives, idlers, speed reducers, sheaves, belting, etc.

3-roll Troughing Idlers for these sizes:

14" belt	$16.50	24" belt	$22.50
16" belt	17.25	30" belt	23.00
18" belt	21.00	36" belt	26.00
42" belt	$29.75		

1-roll Return Idlers for these sizes:

14" belt	$6.38	30" belt	$10.00
16" belt	6.75	36" belt	11.00
24" belt	8.75	42" belt	12.00
48" belt	$13.00		

All steel. Interchangeable with other well-known makes. Replaceable ball bearings. No bearing adjustments required. Easy to start and will run in cold weather. Rust-proof ball races; maintenance is negligible.

SAVE WITH "ECONOMY-TYPE" IDLERS

"Spool Idler" economy conveyors for lighter loads of cinders, gravel, stone, wet concrete. Very low price.

VIBRATING SCREENS

Heavy duty eccentric shaft types. One to five decks. Screening sizes from 3'x8' to 5'x14'. Priced from.....$1416.00

Screen cloth or plate included. Many smaller machines in stock. Screen cloth included. Prices start at $431.00.

Big Stock of cloth and plates.
Send us your want list.

TRUCK SCALES

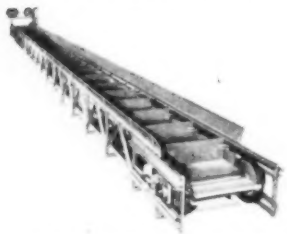
15 Ton Truck Scales.....$518.00
20 Ton Truck Scales..... 586.00
26 Ton Truck Scales..... 650.00

Other scales to 50 ton capacity. All truck scales complete with structural steel weigh-bridge. Replacement parts for most all makes of scales.

PORTABLE CONVEYORS

Several in stock. Various widths and lengths in troughed belt, flat belt, and flight types. Gasoline and electric power. Some as low as $405.00.

HEAVY DUTY FLIGHT CONVEYORS



For high-temperature conveying as well as normal work. For lime and cement plants, kilns, lightweight aggregate furnaces.

Any length. Flights up to 8" x 24". All welded structural and sheet steel. Heavy duty, double guided chain.

Priced from $514.00

BONDED HAS GUARANTEED EQUIPMENT FOR QUARRIES, SAND & GRAVEL PRODUCERS, LIME PLANTS, LIGHTWEIGHT AGGREGATE AND CLAY-PRODUCTS PROCESSING. WE ALSO EQUIP CEMENT PLANTS & BLOCK MANUFACTURERS

WRITE FOR COMPLETE CATALOGUE AND PRICE LIST OF NEW BONDED EQUIPMENT. ALSO OUR BARGAIN LIST OF TRADEINS, DEMONSTRATORS, AND REPOSSESSIONS. REBUILT AND WITH NEW EQUIPMENT GUARANTEES

More than 3000 mines and quarries have modernized with Bonded equipment.

BONDED SCALE AND MACHINE COMPANY

PHONES: GArfield 2186; FRanklin 6-8898, Evenings.

110 Bellview — Columbus 7, Ohio

WANTED

General Manager to take complete charge Ready Mix plant in North Central area. Exceptional opportunity for man with necessary experience. Replies held strictly confidential. State age, experience, salary desired and date available.

BOX No. J-7, c o Concrete Manufacturer
431 South Dearborn Street — Chicago 5, Illinois

WANTED

Concrete Pipe Molds 12" to 84" diameter.

Box J-9, c o Concrete Manufacturer
431 S. Dearborn Street, Chicago 5, Illinois

WANTED: Good used late model two block machine for making concrete blocks using three cored pallets. Can be either semi automatic or fully automatic in operation. Must be priced right.

CONCRETE BUILDING PRODUCTS, INC.
100 South 4 Street — Burlington, Iowa

WANTED

J & C POCKET BRICK PRESS

WAKEFIELD CONCRETE BLOCK COMPANY
101 Foundry Street, Wakefield, Mass.

WANTED

Cast Iron Pallets for Multiplex Chimney Block Machine. State dimensions and flue opening.

Spencer Concrete Products Company
Spencer, Iowa

FOR SALE

Modern Burial Vault Plan on an 8 Acre Site with over 6000 sq. ft. of Mfg. space. Oldest established Co. in Wisconsin. Doing business the year around. Steady profits. Good reason for selling. Write:

BOX NO. J-5, c o Concrete Manufacturer
431 South Dearborn Street — Chicago 5, Illinois

FOR SALE

A good used Korpack block machine with 4—8 and 12 inch attachments and all pallets. Replacing with bigger equipment.

ARENZ BLOCK COMPANY
Kiel, Wisconsin

FOR SALE

One Stegmo 73 Jolitrete Machine with off-bearing hoist. 4"-8"-10" and 12" Mold Boxes and Pallets. Also racks for this machine. All in good condition, ready for immediate use.

ECONOMY BLOCK COMPANY
6332 West State Street — Wauwatosa 13, Wisconsin
Ph.: Bluemound 8-1620

CEMENT COLORS

Write for free samples and prices of "LANSCO" CEMENT COLORS produced in 34 attractive shades. Packed in bulk and in 1 lb. and 5 lb. packages.

manufactured by
LANDERS-SEGAL COLOR CO.
71 Delevan St. — Brooklyn 31, N. Y.

CONCRETE MANUFACTURER CLASSIFIED SECTION

FOR SALE

One Kelley air stripper block machine & parts including chimney pallets—one Blystone 18 foot mixer and skip hoist all complete with motors, etc. Can be seen in use. Immediate delivery. Also 3300 flat pallets 18x18x¼ f.o.b. Little Ferry.

HOFFMANN BLOCK CO., LITTLE FERRY, N. J.

FOR SALE

Lith-I-Bar, 2-block, plain pallet automatic block machine, complete with mold boxes and attachments to produce 3", 4", 6", 8", 10", 12" and chimney block. Complete with air compressor, 1,500 — 18 x 18" pallets, 40 steel racks and 30 cu. ft. mixer. Now in operation—3 years old. Installing larger machine. Priced to sell immediately.

CONCRETE PRODUCTS & SUPPLY CO.
FREMONT, OHIO
Phone East 2970

CONCRETE BLOCK & BUILDING MATERIAL SUPPLY COMPANY

Located in one of Ohio's fastest growing cities. Population over 400,000. For sale by owners wanting to retire. Shows increased gross every year for past 8 years. Modern plant. Has Besser Vibrapac block machine. 2 Besser concrete mixers, bulk cement storage with Puller Kinyon unloader. 1 Clark and 1 towmotor lift truck. 2 automatic steam boilers, one gas and one oil). 5 concrete curing rooms. Sand and gravel tipple. Concrete storage and runways. Silo for lightweight aggregate and conveyor. Large supply of pallets and racks. Excellent location with railroad siding. Trucks, trailers and other equipment. Price $200,000.00. Gross sales in 1951 over $300,000.00. Better than $50,000.00 net. Principals only. Reply,

Box No. J-2, c/o CONCRETE MANUFACTURER
431 S. Dearborn Street Chicago 5, Illinois

MINERAL COLORS for BRICK MORTAR STUCCO-PLASTER-CONCRETE

"Fine Because of Their Fineness"
Ask for samples and recommendations.

BLUE RIDGE TALC CO., INC.
HENRY, VIRGINIA

TRANSIT MIXERS

Smith	3 yd.	Hi-Discharge Mixer. No Truck @ $2250.00
Rex	2 yd.	Hi-Discharge Mixer w/1947 Ford Truck @ $1650.00
Rex	2 yd.	Hi-Discharge Mixer w/Int. K-8 @ $3,000.00
Smith	2 yd.	Hi-Discharge Mixer w/GMC Truck @ $3,000.00
Jaeger	3 yd.	Hi-Discharge Mixer w/White Truck @ $3,500.00
Rex	3 yd.	1951 Model Hi-Discharge Moto-Mixer w/Ford Tandem Truck @ $6,000.00
Rex	3 yd.	1951 Model Hi-Discharge Moto-Mixer w/Chevrolet Tandem Truck @ $6,000.00
Rex	27E	Paver. Big Drum. Reduced to $2500.00

EIGHMY EQUIPMENT COMPANY
120 S. Pierpont Rockford, Illinois

FOR SALE

One—Stearns Zipper, six months old.
3500 — 4" C. I. Pallets.
2400 — 8" C. I. Pallets.
2000 — 12" Pressed Steel Pallets
Price $6500.00

BOX NO. J-14, c/o CONCRETE MANUFACTURER
431 South Dearborn Street Chicago 5, Illinois

FOR SALE

Late Model Kelly Tamper
Air and Hydraulic operated.
8000 - 8 in., 4000 - 12 in., 4000 - 4 in.
Pressed Steel Pallet.
4 - 8 and 12 in. Mold boxes.
Spare parts.
Exhaust Fans. 11,200 cu. ft. per minute for Kilns and Cooling.

BOX NO. J-10, c/o Concrete Manufacturer
431 S. Dearborn St. Chicago 5, Ill.

FOR SALE

One 2'3 Jolcrete Block Machine
With 4"-8"-12" Mold Boxes
Approximately
6000 4" Pallets
4500 8" Pallets
3500 12" Pallets
1500 8" Corner Pallets
Plant now in operation. Priced to Sell.
Phone Re 2-3650

KOLTCZ CONCRETE BLOCK COMPANY
190 Northfield Road Bedford, Ohio

FOR SALE

Established Sand & Gravel Business. Land, buildings and equipment. Good local market. For further information, call **Ben Hale, Joe L. Moore & Company, Gadsden, Alabama, phone 2531.**

SUPERINTENDENT WANTED

Man experienced all phases of Bituminous Asphalt manufacture, machinery and plant maintenance. Knowledge of quarrying and stone crushing useful — Eastern Massachusetts. Address inquiries to

Box No. E-22, c/o Pit and Quarry Publications
431 S. Dearborn St., Chicago 5, Ill.

YOURS TO SERVE

If you have not found the equipment you are looking for, the research dept. of The Concrete Manufacturer can and will gladly assist you. Tell us what it is . . . Write to

Research Dept.
C/O The Concrete Manufacturer
431 S. Dearborn St. Chicago 5, Illinois

WE ARE OFFERING FOR SALE THE FOLLOWING:

1948 Dunbrik plant for sale complete with racks and pallets, for 15,000 brick per day. Dunstone attachments complete. This machine will pay for itself in six months. $3000.00.

One Champion Drain Tile Machine complete with 7½ H.P. - 220V motor complete with racks and deck boards for full day's run. Attachments for 4" - 6" - 8" File.

One 1946 Stearns Model "A" Clipper Stripper, motor driven. With a Galland Henning Air Stripper or conventional as desired; with 2 mold boxes and all attachments for making 8" - 10" and 12" blocks. Universal Mold Box forms for 4" to 12" Blocks.

1—3 H.P. - 220 Volt - 60 Cycle, 3 Phase Westinghouse Motor.

Numerous serviceable parts—quantity of pallets as needed.

One Blystone Mixer completely reconditioned. 6 cubic ft.

One 8' x 32" Vibration Table complete with ½ H.P. 220V motor and control. This unit will vibrate 12 ft. Lintels.

10 Lintel Forms up to 10 ft. Fair prices on all this surplus equipment.

Indianapolis Dunbrik Co.
2321 Kentucky Ave. Ph. Belmont 4841
Indianapolis 44, Indiana

FOR SALE

One Quinn Concrete Pipe Machine F S 4 10" to 60".
One 28 cubic ft. Starnes Batch Mixer with motor.
Two forms each 12", 15", 18", 24", 30", 36" in three ft. lengths.
Two each 42", 48" in four ft. lengths.
One header ring for each size. One Top core center plate each size one jack slip ring for each size.
Pallet rings each size 155 12", 210 15", 200 18", 106 24", 85 30", 39 36", 30 42", 30 48".
Two Rubber tired carts for sizes 30" to 60" with Hydraulic Jacks and lever lifts.
Two small carts 30" and down.
One half ton electric hoist for drawing the core.

AND

Five 42" hand forms complete with two pallet rings each
Four 48" hand forms complete with two pallet rings each
The Machine can be seen in operation altho it is sitting idle now.
For further information call or write.

BOX NO. J-4,
c/o Concrete Manufacturer
431 S. Dearborn St., Chicago 5, Illinois

CONCRETE MANUFACTURER CLASSIFIED SECTION

FOR SALE

2 new Baughman bucket elevators, belt driven, used about 2 hrs., originally 26 ft. long, now 28 ft., including buckets & 5 H.P. 3 phase motors.

Also—2 Appley hand machines with molds and 1500 aluminum pallets for making U-Blocks for pouring tie beams.

25 sturdy steel 50-block racks.

1—2 block machine with head & 275 aluminum pallets to make 8 x 8 x 16 column blocks—can be converted to regulars.

1—Hand lift truck—1—3 way Hopper.

1—1 Bag Stearns mixer & motor, all ready to go. Have enlarged plant.

Also—1 Dunn Champion Drain Tile machine with 3 H.P. single phase motor in good condition.

or will swap part for 2500—18"x18"x 5/16" steel plain pallets in good condition or 18"x18"x⅜" aluminum.

Broward Septic Tank & Block Co.
South Federal Highway
Fort Lauderdale, Florida

FOR SALE

Kent 12 C. F. Mixer - 10 HP Motor	$ 350.00
Kent Elevator - 3 HP Motor	100.00
Set 3 Beam Wheelbarrow Scales	125.00
1948 Stearns Jolterete No. 7	4,750.00
Air Operated Offbearer	400.00
4" x 12" Combination Mold Box	630.00
28 Cu. Ft. Besser Mixer & Skip Hoist	2,000.00
Hough Pay Loader Model HA	1,750.00
25 HP Automatic Gas Boiler	1,800.00
2 Hydraulic Lift Trucks	200.00
3,000 Std. 8 x 8 x 16 P.S. Pallets - BABA	1,350.00
53 Steel Racks @ $15 Each	795.00
575 Sash End 8 x 8 x 16 P.S. Pallets - BATON	287.50
150 Dble. End 8 x 8 x 16 P.S. Pallets - BALM	75.00
2,400 - 4 x 8 x 16 P.S. Pallets	960.00
1,000 Standard 12 x 8 x 16 P.S. Pallets	800.00
300 Sash End 12 x 8 x 16 P.S. Pallets	270.00
	$16,642.50

All of the above equipment is in first class operating condition. Reason for selling, replacing with larger equipment.

ATLAS CONCRETE PRODUCTS CO.
Mt. Sterling, Kentucky **Phone 58**

FOR SALE
Concrete Products Plant

Manufacturer of Septic Tanks, Grease Traps, Well Tile, Culvert Pipe, Drain Tile, Water Meter Boxes, Water Troughs, Foundation Blocks and any thing in precast concrete.

New Building 40' x 80'. 1 sack stationery mixer, 1 sack Jaeger portable mixer, 2 trucks, office building, tool and cement house, complete water well service, dealership for Fairbanks-Morse water systems, pipe and fittings, sidewalks and driveways contracted, complete sewer systems installed.

This plant and 5 room well furnished home on 6 acre tract.

This plant and home located in the heart of the East Texas Oil Field and new Steel Industry. Doing good business since 1931.

GLADEWATER CONCRETE PRODUCTS CO.
P. O. Box 812 **Gladewater, Texas**

UNBREAKABLE PALLET RINGS

Write for full information

TEXAS FOUNDRIES
LUFKIN, TEXAS

FOR SALE

5 Stearns Model "A" Clipper Strippers, complete with motors.
7 Stearns #9 Jolteretes, complete with all necessary motors and air type offbearers.
2 Stearns #7 Jolteretes, complete with all necessary motors and air type offbearers.
500 Chase hinge-type 72-block capacity steel racks.
1 Stearns 18' Mixer, complete with motor.
1 Kelly 30' Mixer, complete with motor.
1 Besser 50' Inclined Skip Hoist.
100,000 Commercial pressed steel pallets of all sizes (send tracing or drawing)

METROPOLITAN EQUIPMENT COMPANY
P. O. Box 4465
Washington 17, D. C.

100,000 PRESSED STEEL PALLETS In Stock

Send tracing or pallet for quotation.

GENERAL CONCRETE EQUIPMENT CO.
307 Hunter Street
Dept. PQ
Gloucester, New Jersey

FOR SALE:

2—Rockercrete Vibrapac Block Machines, with 8" & 4" Molds. 3500—8" cast iron pallets, 3300—4" cast iron pallets, 72 steel pipe racks. Good condition.

Inspection Invited

BEST CONCRETE PRODUCTS COMPANY
407-9 Plant Street, East Point, Georgia
Phone: Calhoun 2588

FOR SALE

COMPLETE BLOCK PLANT. Columbia 2S Plain Pallet Machine Recently Installed. Large Southwestern City of 150,000 pop. All year operation. Established in 1945. Health reason for selling. Will sell equipment separate.

Box No. J-8, c/o Concrete Manufacturer
431 South Dearborn Street, Chicago 5, Illinois

FOR SALE
SLAG — CINDERS

Suitable for Manufacture of lightweight block. Unlimited quantity — f.o.b. Chicago, Illinois

Box No. J-11, c/o Concrete Manufacturer
431 South Dearborn Street, Chicago, Illinois

PACKER-HEAD WINGS

Both McCracken Type and Martin Trowslars—PROVED to last as long or longer—yet cost considerably less. Write for prices.

TEXAS FOUNDRIES
LUFKIN, TEXAS

TRUCK MIXERS FOR SALE

2 1950 Jaeger 3 yards on 1950 GMC tandem axle trucks with auxiliary transmission.

AMERICAN CONCRETE SERVICE
Hamilton, Ohio

FOR SALE

Stearns fully power operated tamper	
4—8—12 inch attachments	$400.00
1 Bag mixer	150.00
1 Cinder crusher, new	250.00

Can be seen in operation.

LIGNEEL CEMENT BLOCK COMPANY
Route 38 **La Crosse, Wisconsin**

FOR SALE: BRICKCRETE machine for making 2 cell 8¾" x 7⅝" x 11⅝" concrete building blocks; 25 steel curing racks; 1 Barrett Hydraulic Lift truck; approximately 2000 Marine Plywood pallets; lot of various molds. Price for the entire above $2750.00.

CONCRETE BUILDING PRODUCTS, INC.
100 South 4 Street **Burlington, Iowa**

IDLE EQUIPMENT WASTES MONEY

A good way to get back a large part of the money you spent for equipment you're no longer using is to SELL IT.

And, the best way to sell it is through the Concrete Manufacturer, the Market Place for supplies and services.

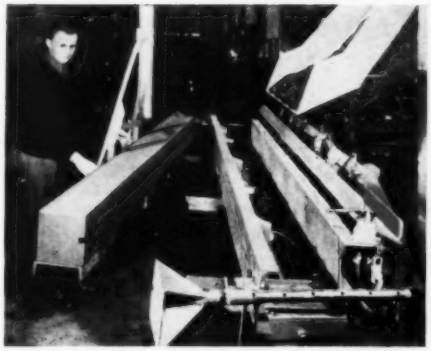
Let someone else have the benefit of equipment you can't use in exchange for hard cash you can use in other ways.

So important is the Concrete Manufacturer used equipment section that many readers (and there are over 24,000 of them—all potential buyers) turn to it first when C M arrives on their desk.

Tell us what you have to offer for sale or trade, we'll set up the ad for you. Mail today and watch the results.

THE CONCRETE MANUFACTURER
431 South Dearborn St., Chicago 5, Ill.

STEEL SHORT! · · · PROFITS LONG!



· · · when you MAKE and SELL CONCRETE LINTELS and SILLS

• • • • •

Popular KENT LINTELATORS are economically producing lintels and sills in various lengths and sizes which satisfy the increasing requirements of builders everywhere.

With steel difficult to obtain there is an even greater than normal demand for these proven products.

Then, too, their lower "on the job" installation cost is a big factor to the builder, resulting in a greater ultimate profit to him.

Don't let another day slip by without getting the complete facts and figures on KENT LINTELATORS.

Write at once for the bulletins.

Lintelators are available with special motor driven mechanical vibrators which reduce noise.

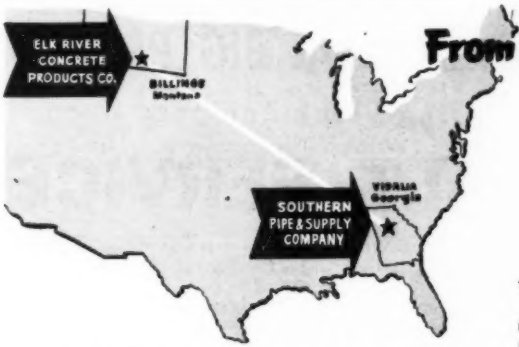
SUPER LINTELATORS
Make lintels 7⅝" HIGH by 3⅝" 5⅝" 7⅝" 9⅝" 11⅝" WIDE in these lengths.

S 6	2'8" up to 6'
S 7	2'8" up to 7'4"
S 8	2'8" up to 8'8"
S 9	2'8" up to 9'4"
S10	2'8" up to 10'8"

STANDARD LINTELATORS
Make lintels 7⅝" HIGH by 3⅝" 5⅝" 7⅝" WIDE in these lengths.

No. 6	2'8" up to 6'
No. 7	2'8" up to 7'4"
No. 8	2'8" up to 8'8"
No. 9	2'8" up to 9'4"
No. 10	2'8" up to 10'8"

The **KENT MACHINE CO.** Cuyahoga Falls, Ohio — Concrete Products Machinery Since 1925



From Billings to Vidalia — USERS ARE SATISFIED with the Dixon PIPE MACHINE!

From one end of the country to the other . . . in Montana, Georgia, Louisiana, Oklahoma, Texas, Mississippi, Colorado, Tennessee and even South America, over fifty users of DIXON Pipe Machines report *complete satisfaction*. They're making good pipe, fast, and at lowest costs. A pipe machine that performs satisfactorily under the diverse conditions encountered in such widely separated points as Billings, Montana and Vidalia, Georgia will surely perform satisfactorily for you, wherever you are.

YOU too will be satisfied when you put one of these modern, high speed pipe machines to work in your plant. They produce highest quality concrete pipe, in three and four foot lengths, bell-and-spigot or tongue-and-groove, up to 18" diameter. Money-making production rates are assured by its improved packer-head design, with hydraulic controls, automatic spinning bellpacker, variable speed drive and many outstanding features of speed and simplicity.

Join the many *satisfied users* of DIXON Pipe Machines *without delay*. Order your machine *now*, while quick delivery can still be made without priorities.

NEW 48 PAGE CATALOG

Here's the full story on the DIXON Packerhead Pipe Machine and it's yours just for the asking. Write today for your copy.

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Pipe Bend Machines	Dixon Conveyors
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"The Right Combination"

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PLUS

The many other features of Diamond T 4-5 Ton 6x6 Truck

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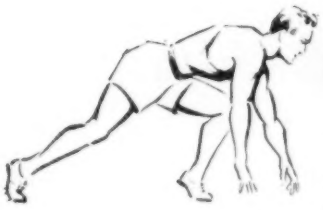
when the Spring Block Business booms!



Many satisfied customers are now operating more than 70 machines

Write for name of Oswalt-Serviced plant nearest you

Ask for our new Bulletin, OSWALT SERVICE

OSWALT SERVICE

can be applied to your Super Vibrapac whenever required . . . . but now is the most economical time to have it done, during slack periods, before your big season begins.

Then your Vibrapac machine will be primed for increased production, and ready to earn extra profits for you throughout the busiest part of the year, paying a big return on your investment.

Send us your order today, and advise the date you want us to call. After our men arrive on the job, it will take only a short time to change over your Vibrapac to the Oswalt system of operation.

Your output will be boosted from 600 to 900 blocks per hour without sacrifice of quality, giving you an extra profit of at least $60.00 per day for each machine converted.

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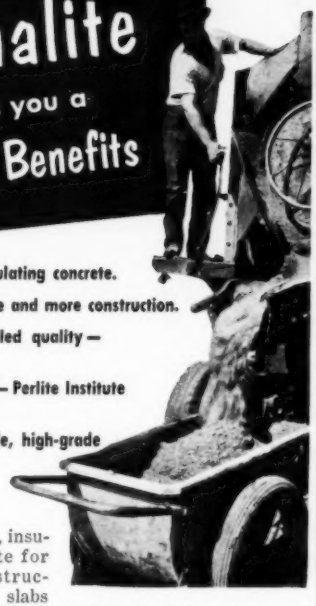
Permalite offers you a Batch of Benefits



- Lightweight, insulating concrete.
- Specified in more and more construction.
- Uniform, controlled quality — bag after bag.
- "U L" approved — Perlite Institute approved.
- A more workable, high-grade ready-mix.

■ Lightweight, insulating concrete for roof deck construction and floor slabs can mean a big piece of business for you — especially when you use *Permalite* aggregates.

Permalite is top quality, expanded perlite, exactingly graded to proper particle size. In its weight class, concrete with Permalite requires minimum cement-water ratio, has less drying shrinkage, higher strength, less absorption and greater resistance to freezing and thawing.

No wonder lightweight concrete containing Permalite, the *leading* perlite aggregate, is being asked for by ever-growing numbers of architects, builders and contractors.

BETTER PRECAST PRODUCTS, TOO

Concrete with Permalite can be used to produce lightweight, insulating products such as blocks, slabs and panels which can be sawed, nailed and easily handled.

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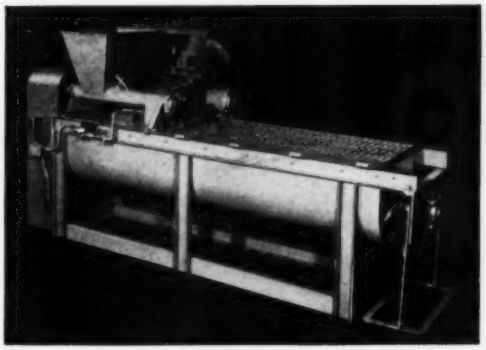

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(Formerly Yoder)

CONTINUOUS MIXER

embodies so many radically new improvements that it is freely predicted this mixer will rapidly replace batch mixers in plants requiring a mixer capacity adjustable from about five up to 20 or more cu. yds. per hour. In addition to low first cost (much less than that of a batch mixer) it embodies these important features:

1. *Vibrating Belt Positive Feed* reduces aggregate, regardless of moisture contents, to CONSTANT VOLUME. Makes expensive weighing equipment and moisture determinations unnecessary.
2. *Accurate Proportioning* by means of aggregate gates which, when once set for a production run, need no further attention.
3. *Variable Speed Drive* gives accurate volume control to meet varying block machine requirements, from 5 to 20 cu. yds. per hour.
4. *Cement Economy* — greatly improved mixing action insures up to 50% higher strength of concrete, making for maximum cement economy by using leaner mixes.

These and other exclusive features are illustrated and described in new Mixer Bulletin—yours for the asking.

Also send for information on Jones Concrete Testing Machines. Low first cost, guaranteed performance.

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108 HORNING ROAD • PITTSBURGH 34, PA.

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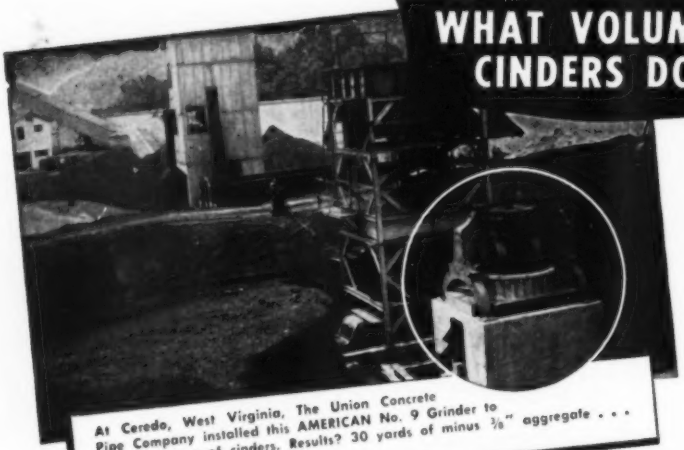

At Ceredo, West Virginia, The Union Concrete Pipe Company installed this AMERICAN No. 9 Grinder to work on acres of cinders. Results? 30 yards of minus ⅜" aggregate . . . every hour, every day.

Select from 8 AMERICAN Grinders Hourly Output 4 Yards to 75 Yards!

Write your own ticket for your plant's cinder-grinding requirements . . . one of the 8 AMERICAN Grinders will give you the output needed . . . deliver minus ⅜" mesh aggregate without additional separation! Your AMERICAN Grinder will require minimum maintenance . . . will conserve power . . . will help produce low-cost, top-quality cinder block. Write . . . wire . . . phone . . . ask for an AMERICAN grinding expert to help you lick your problem.

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TRUSSED *Design*

NOW AVAILABLE . . . IN GREATER SUPPLY

● Dur-O-wal . . . the patented steel reinforcing for every type of masonry wall . . . is being shipped on stepped-up schedules. This backbone of steel is economical, lays fast, prevents unsightly cracks. Trussed design incorporates architecture's oldest reinforcing principle.

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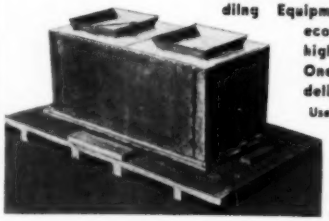
CARPENTER boosts 'em!

Production • UP • Profits

. . . when you make septic tanks with CARPENTER Tank Forms and Handling Equipment! Insure large, economical output of a high quality product. One man handles our delivery rig.



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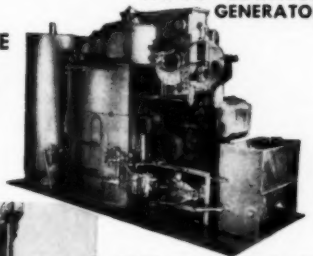
GET A LITTLEFORD "Kwik-Steam"

VAPOR • CLARKSON GENERATOR

for your
• BLOCK • PIPE
or
• READY-MIX PLANT



"Kwik-Steam" Generator is the fastest steam producing unit ever designed. **You get steam in 2 minutes time from a cold start.** "Kwik-Steam" Generators are used to heat aggregate and water at proper temperatures and produce extra steam for warming stock piles and equipment for Ready Mix Concrete Plants. This unit delivers steam only when steam is needed. The slow, troublesome steam boilers cannot supply steam for modern high-speed production. "Kwik-Steam" Generators are low cost operating, using fuel oil or gas as fuel, are completely automatic and are made in sizes ranging from 20 to 165 BHP.

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ANNOUNCING "THE ROCKET"

The Latest Development in Revolving Drum

LOW IN COST

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Separate Engine Drive or Power Take-Off Hydraulic Drive

●

Fast to Charge, Mix and Discharge.

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. . . in Portland Cement Association advertisements month after month. These ads in leading magazines bought by millions of house-conscious readers:

1 Tell of the beauty, economy and structural advantages of concrete masonry.

2 Create a real desire and preference for a concrete masonry house.

3 Send local prospects *to you* for more information and assistance.

That's where you take over. When a PCA ad appears mention it by page and magazine in your own newspaper, television, radio or direct mail advertising. Explain that your plant is headquarters for concrete masonry construction. Invite prospects to call for information and help in planning their houses.

When a prospect calls show him photos or take him to see attractive concrete masonry houses. Show him plans or tell him where to get them. Give him names of architects, builders and lending agencies experienced in designing, building and financing concrete masonry houses.

You'll find that tying-in with PCA ads and following through with service of this kind helps you get more business.

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A national organization to improve and extend the uses of portland cement and concrete...through scientific research and engineering field work

truck-man runs
18,000 HOURS
without overhauling

Here's what Knox Concrete Products, Inc., Knoxville, wrote us when they placed an order for replacement parts recently:

". . . We are not only well pleased but we do not believe there is a piece of equipment on the market which would serve our requirements any better . . . Our normal load would probably run in the neighborhood of 4000 lbs. . . . We now have four Truck-Men . . . that run possibly *20 hours every day continuously* . . . The cost of operating a Truck-Man is certainly extremely low, as it uses very little gas and oil . . . We have had very little maintenance on this equipment."

". . . After six years at approximately 10 hours per day steady running I find it necessary to rebuild the majority of gears, sprockets and other movable parts on one Truck-Man and prepare to do so on another . . ." says Cement Block Industries, Coral Gables, Florida.

What more need we say? That last statement works out to approximately 18,000 hours of trouble-free operation. What would the record show if they had been using the *new* Truck-Man with its husky 5.8 h.p. Wisconsin engine? It's Truck-Man's low weight to payload ratio combined with rugged power that makes possible its unequalled efficiency in block-plant operation. You burn only a gallon of gas on most 8-hour shifts yet spot the heaviest racks in jig-time. Rubber cushioned ride, hydraulic lift, smooth start and stop mean no costly checking of blocks. Lower costs from purchase through maintenance and big savings in manpower—everyday—for years—make Truck-Man your *first* necessity for block handling. Available in skid, pallet, platform and *New* tractor models.

Send for full details in our new 1952 catalog.

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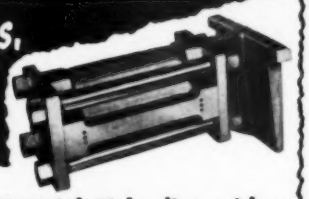
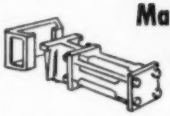
FAST, EFFORTLESS, LOW COST



Material Unloading with a CANNON RRHC vibrator



Save valuable man hours, speed material unloading with a Cannon RRHC vibrator. Specifically designed for use on covered railroad hopper cars this "Quiet-Type" pneumatic vibrator quickly loosens packed materials and keeps them flowing freely. Convenient male bracket fits snugly into female bracket standard on most covered railroad hopper cars. Female brackets can be supplied for horizontal mounting on dump trucks, hoppers, bins, chutes, flasks and mining cars. Weighing only 75 lbs. the unit is readily portable, can easily be installed or removed. Ideal for use with fine coal, sand, chemicals, cement and concrete. Ideal as a general utility unit.

A-5187

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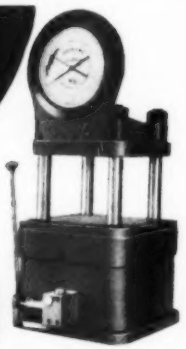
the FORNEY Compression TESTER

Sells Your Products... Increases Your Profits



• Daily testing of all concrete and concrete products increases yield, profit and customer confidence.

Write for full information

FORNEY'S Inc. 203 ELM ST.
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NOW MORE THAN 120 LICENSED MANUFACTURERS Producing

Patented
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Concrete STEPS

A Small Investment That Pays Big Dividends

Homeward all metal forms are precision built to produce a product that requires no hand finishing.

The exclusive franchise for your territory may still be open.
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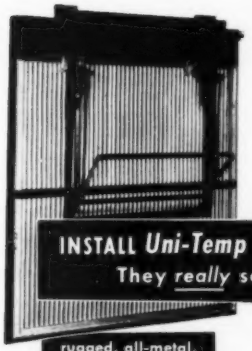
Cure *better* block— at *lower* cost!

by stopping costly losses of heat and steam through kiln doors or covers that don't *really* seal and insulate. Your cost per block goes *down* when you stop pouring fuel $$$$$ into the open air. And you get *better block* too—because you get more uniform curing conditions throughout the kiln.



INSTALL *Uni-Temp* CURING ROOM DOORS
They *really* seal and insulate

rugged, all-metal, fully insulated!

Ask too about the *Universal* DOOR CARRIER
World-famous door handling equipment—since 1904

Write:
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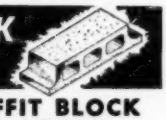
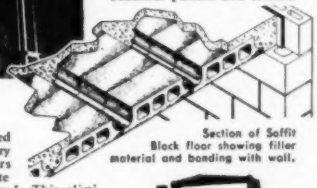
SELL MORE BLOCK ON EVERY JOB!



Furnish VIBRAPAC SOFFIT BLOCK for ALL FLOORS and ROOFS

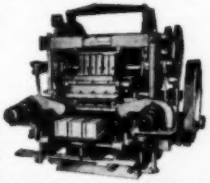
Removing Centers from Finished Floor.

Permanent, Fireproof Floors and Roofs. Low initial cost and maintenance. Natural base for radiant heat installations. Provide surface of maximum acoustical and insulation value. Can be plastered, or if left exposed, makes a ceiling of beautiful pattern and texture.



Section of Soffit Block floor showing filler material and bonding with wall.

Soffit Blocks are supported in place with temporary adjustable steel centers while reinforced concrete slab is placed and cured. This eliminates timber shoring and leaves space below clear during construction.



BESSER VIBRAPAC PRODUCES SOFFIT FLOOR AND ROOF UNITS

The same machine that produces high quality concrete masonry units in all styles and sizes, using Plain Pallets. Continuous, full capacity operation. Fully automatic. No machine operator required.

BESSER MANUFACTURING CO.
ALPENA, MICHIGAN, U. S. A.
Complete Equipment for Concrete Products Plants

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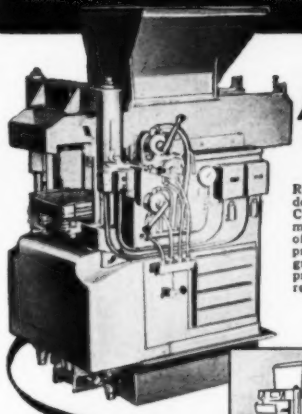
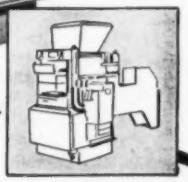
HIGHEST QUALITY BLOCKS... LOW INITIAL INVESTMENT

Columbia

"BASIC" Block Machine



Rugged, versatile design, the Columbia Basic meets every need of the small producer and will grow with production requirements!



ADD PALLET FEEDER AND FEED DRAWER AGITATOR

. . . when demand requires higher production, just add pallet feeder and feed drawer agitator to speed up production, keep pace with sales!

ADD AUTOMATIC CONTROLS AND PALLET CLEANER

. . . and your Columbia Basic becomes a most modern, fully automatic, electronic controlled block maker! The Basic truly grows with production requirements!

THE COLUMBIA BASIC INCREASES IN VALUE AS BLOCK PRODUCTION GROWS!

As more production capacity is needed, you can add a pallet feeder, feed drawer agitator, automatic controls and pallet cleaner! Each addition speeds production... increases the machine's value as a block producer and profit maker for you! Use the same basic Columbia from manual operation to fully automatic! Keep abreast of your block production with a Columbia Basic and you'll keep abreast of the block making industry!

Write home office for name and address of sales representative in your area.

Columbia MACHINE WORKS
107 S. GRAND AVE. VANCOUVER, WASH.

Cure concrete block at lower cost

The Paturzo plants in Baltimore prove it can be done with HEATED AIR from

pd

THERMOBLOC

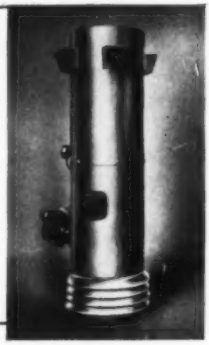
SELF-CONTAINED DIRECT-FIRED HEATERS!

Among the nation's large concrete block manufacturers, V. Paturzo Bros. & Son, Inc., of Baltimore, Md., is one of the most adept at devising ways to reduce production costs and still keep product quality high. Take block curing, for example. This firm uses heated air from THERMOBLOC Direct-Fired Heaters and reports excellent results in block curing.

THERMOBLOC has proven itself highly efficient in this type of application in addition to its wide use in heating open-space buildings. This fully self-contained unit is easy on fuel; transfers heat direct from burning oil or gas to air stream, through one thickness of metal. It is of rugged boiler-type construction and equipped with latest automatic controls that assure accurate heating cycles for block curing. Easy to install inside or outside the curing room.

● One THERMOBLOC provides the heat for approximately 20,000 standard 8's

One of the types of two 550 BTU oil-fired THERMOBLOCS in Paturzo Plants No. 2 and No. 3 curing room, where a full day's output of concrete block is cured overnight. Heated air from the THERMOBLOCS is gently circulated through the room and raises temperature to 100-110 deg. F. No live steam is used. Tops in quality, concrete blocks from the kiln meet all local and State specifications. THERMOBLOC is available in stock models for 100,000 to 1-million Btu/hr. output, larger sizes on special order. For the full facts, mail coupon today.



THERMOBLOC DIVISION

PRAT-DANIEL CORPORATION

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Manufacturers of P-D Power Equipment

Please send me details on thrifty THERMOBLOC.

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Company_____

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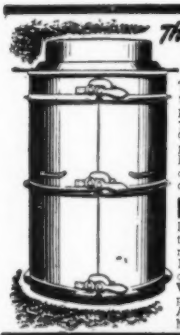

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THE TRANSO LOAD CHAMPION

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- Low initial cost
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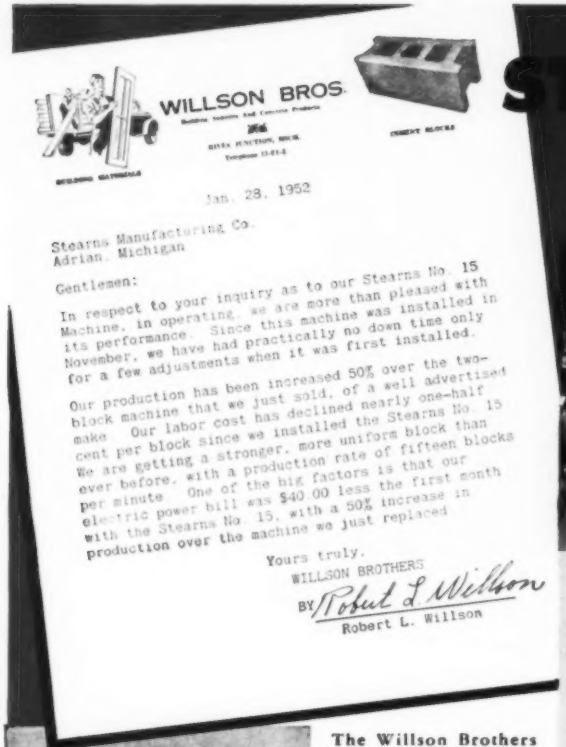
Look for the TRANSO LOAD CHAMPION and the DELUXE at the National Sand and Gravel Association Exposition, Booths 15 and 16, Feb. 11-15.



WILLSON BROS.

RIVES JUNCTION, MICH.

Jan. 28, 1952

Stearns Manufacturing Co.
Adrian, Michigan

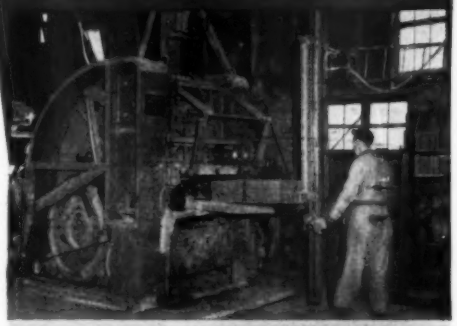
Gentlemen:

In respect to your inquiry as to our Stearns No. 15 Machine, in operating, we are more than pleased with its performance. Since this machine was installed in November, we have had practically no down time only for a few adjustments when it was first installed.

Our production has been increased 50% over the two-block machine that we just sold, of a well advertised make. Our labor cost has declined nearly one-half cent per block since we installed the Stearns No. 15. We are getting a stronger, more uniform block than ever before, with a production rate of fifteen blocks per minute. One of the big factors is that our electric power bill was $40.00 less the first month with the Stearns No. 15, with a 50% increase in production over the machine we just replaced.

Yours truly,
WILLSON BROTHERS
BY Robt L Willson
Robert L. Willson

STEARNS 15 Cuts Costs!



Here are a few more reasons for Bob Willson's enthusiasm over his one-man, fully automatic, plain pallet, Stearns 15 Concrete Block-Making Machine in his Southern Michigan plant:

No More Cracked Blocks—using the same aggregate as always. Smooth, uniform pallet delivery eliminates stress and strain. Dual Shaft Vibration gives densest possible blocks.

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No More Dropping of Mix on Floor—Machine stops instantly and automatically in case it runs out of pallets. Exceptional cleanliness!

No More Strain on Operator—Offbearer always in convenient position.

Sturdy, Compact Build—Extra heavy, anti-friction bearings. Requires small floor space.

Supervision Simplified—Stearns 15 practically runs itself!

The Willson Brothers Stearns 15 plant, seven miles beyond Jackson, Michigan, and slightly off the beaten path to Lansing, has put Rives Junction on the map. Since the 15's installation, builders within a 40-mile radius have learned that they can always depend on Bob Willson for top quality block in a hurry.

"Eureka! I've found it, after 14 years and four other machines!" says Bob Willson, left, president of the company. Others in the photo are Mrs. Catherine Van De Sande, secretary, Arthur Willson, vice-president and plant superintendent, and Fred Oxbrough, yard foreman.

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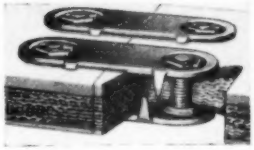

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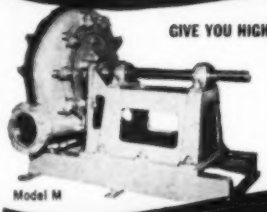

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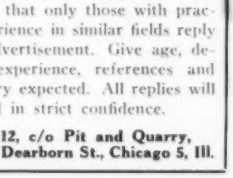
special and standard sizes— 2" to 102" diameter



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1—5 roll Raymond High Side, #3057, complete with separator, exhauster, cyclone, tubular, inter-connecting piping.
1—4 roll Williams "Comet" with separator, motors and all equipment.
1—4 roll Williams "Standard."
6—No. 1, 0, 00, 000 Raymond.
2—No. 00 and 8" Raymond Screen Mills.

HAMMER MILLS:

1—30"x12" Williams, roller bearings, with motor.
1—#1 Williams "Jumbo Jr."
1—#XX Williams Universal, roller bearings, with motor.
1—24"x16" Sturtevant, bar hammer crusher.
2—Type MT Jeffrey Crushers, each with 125 H.P. motor.
2—Jeffrey Mills, 36"x24" and 36"x42" Type E.

BELT CONVEYORS:

2—42" Robins, complete with head and belt pulleys, gear reducers, etc. Complete with all idlers, etc.
162—42" Robins Troughing Idlers, Style 253 NR, Timken bearings.
46—Robins Return Idlers, Style S-350, Timken bearings.
12—Steel supporting Belt Conveyors from 18" to 36" wide, various lengths, including motor drives.

CRUSHING ROLLS:

1—42"x16" Allis Chalmers, Type B.
1—24"x15" Sturtevant Balanced type.
1—24"x32" Penna. Single Roll with motor.
1—24"x36" McLanahan single roll.

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1—3'x24' ALL MONEL, with all auxiliaries.
1—5'x24' Coatesville, ¼" shell.
2—5'x40' Ruggles Coles.
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1—6'x27' Louisville, with 42 stainless steel tubes.
1—7'x70' Louisville, direct heat.

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3—"Jigger" 3'x6' 2 deck, one 3'x6' 1 deck, all totally enclosed, heavy duty.
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1—4'x8' Tyler Niagara, 3 decks.
8—Tyler Hummer Screens, 3'x5', 4'x5', 4'x10'.
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1—8'x12' Oliver acid proof, wood and lead.
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1—36"x24" Komarek-Greaves, two roll.

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ALSO Shovels, Cranes, Draglines; Jaw, Gyratory and other crushers; Symons and Telsmith Cones; Complete Portable Crushing Plants; Rotary Kilns and Coolers; Air Compressors; Conveyors; etc.

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Symons 42"x14' 1½ deck vibrating screen
Traylor double deck VIBRATO screen
Universal single and double deck vibrating screens
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Manganese jaws, 42"x65", 30"x39", 24"x28"
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30" belt conveyor equipment, 350'
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Good used 24" conveyor belt in long lengths
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Diesel Generators. Diesel Baldwin DeLaVergne, 448 BHP; Generator Westinghouse 300 KW, 230/120 Volt, DC. Used Excellent Condition. Also 75, 90 and 100 HP DC Motors. Write for list.

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1—Plymouth 6 Ton Gas—36" Ga. Very Good.
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1—Ohio 30 Ton Coal Fired. Excellent.
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21—15 Ton Hopper—36" Ga.
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Price.....$1500.00
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1—40 x 24 Universal roll crusher late style with 75 h.p. motor, v-belt drive.

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1—Model HM Hough loader new 1949, 1½ yard bucket, 4 wheel drive. Just rebuilt.

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10-30 Good Roads Jaw Crusher
25-40 Cedar Rapids Jaw Crusher
10" B Telsmith Gyratory Crusher
18" Cone Crusher
48" Telsmith Gyrasphere Crusher
24" Telsmith Gyrasphere Crusher
32 and 40 Telsmith Gyratory Crushers
24-40 Universal Roll Crusher
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545 Barber-Greene Loader, on Rubber
120' Schramm Air Compressor
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Mack Truck Dempster Dumper with Boxes

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CLYDE HYDRATOR WITH KUNTZ CONTINUOUS DUSTLESS SYSTEM, 45 T.P.H.
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30 INCH SUPERIOR McCULLY GYRATORY.
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MODEL 322R—ALLIS CHALMERS

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1 #25 Kennedy Crusher, late type with split grinding ring, new type oiling system and V-Belt drive with motor—Good Condition.
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16"	4	3/32"	1/32"
18"	4	3/32"	1/32"
20"	4	3/32"	1/32"
24"	4	3/32"	1/32"
24"	5	1/8"	1/32"
30"	5	1/8"	1/32"
36"	6	1/8"	1/32"

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These machines are in good mechanical condition and have produced up to 100,000 cu. yds. per season of state specification material.

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One portable Osgood crane.
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16"	4	1/8"	1/32"	28 Oz.
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20"	4	1/8"	1/32"	28 Oz.
20"	5	1/8"	1/32"	28 Oz.
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24"	5	1/8"	1/32"	28 Oz.
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30"	6	1/8"	1/16"	32 Oz.
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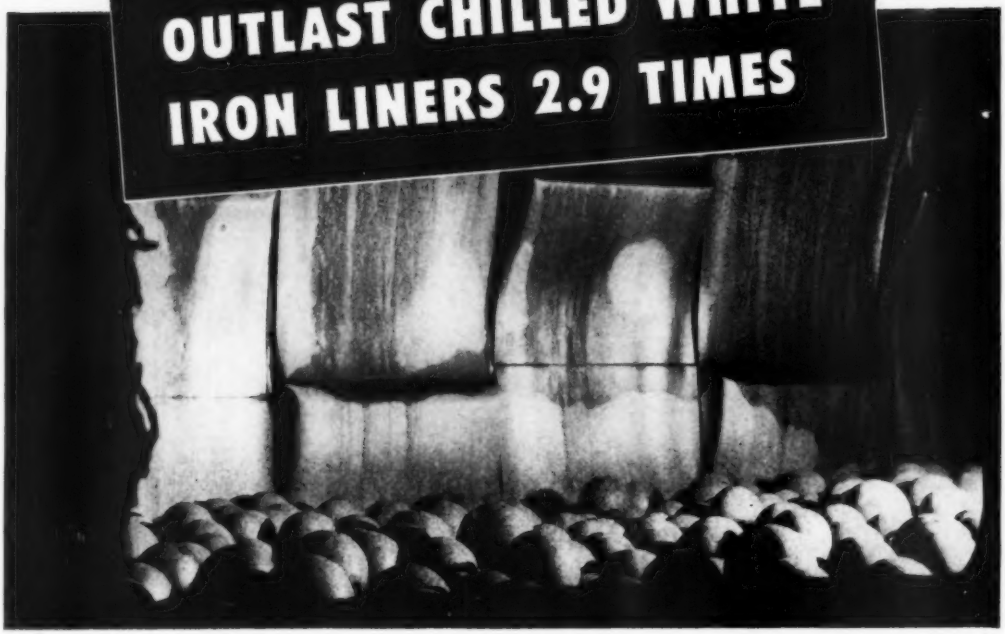

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